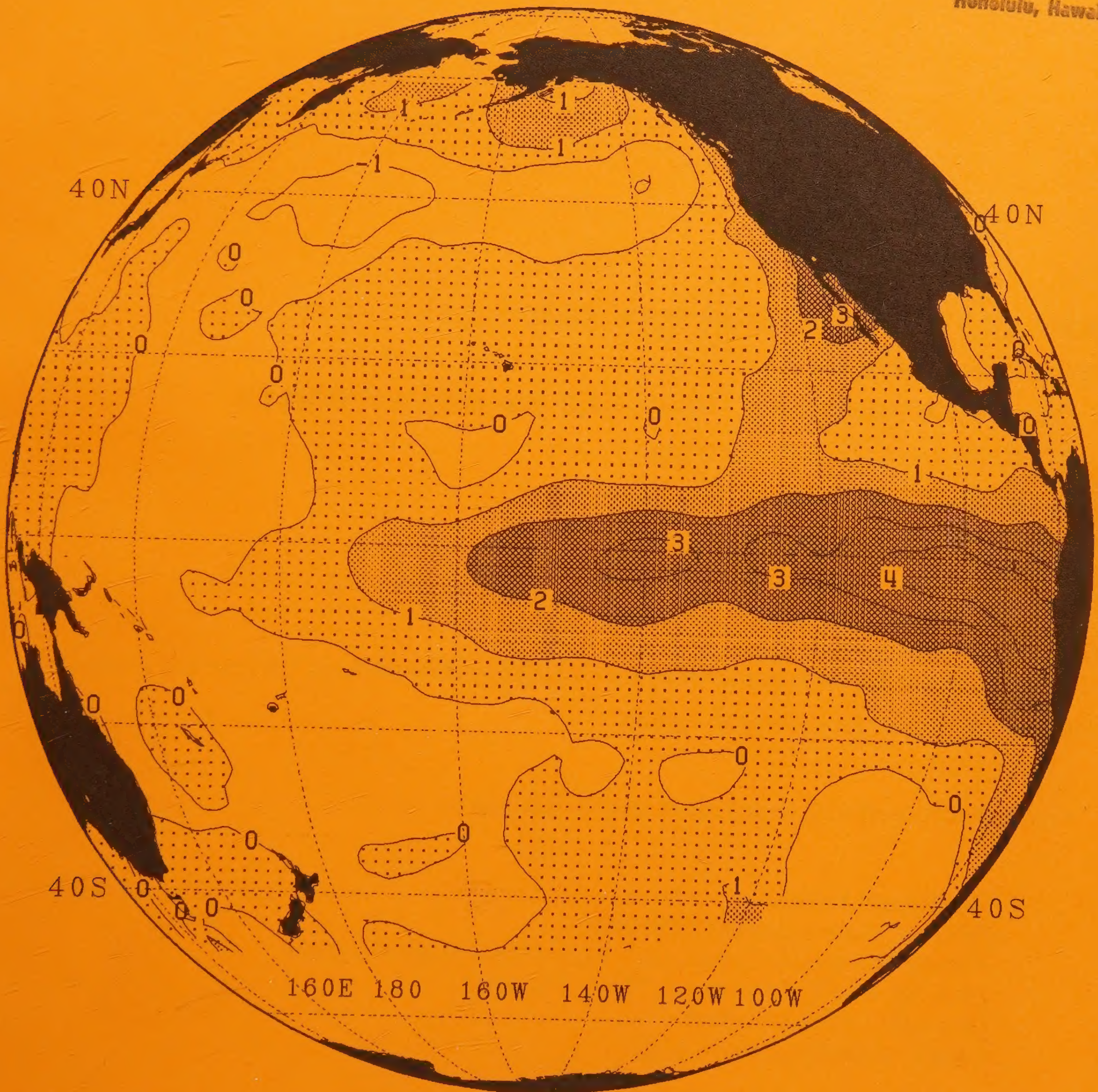
# 気象庁海洋月報

# Monthly Ocean Report

## October 1997 (No. 58)






Climate and Marine Department
Japan Meteorological Agency

気象庁 気候・海洋気象部

平成9年10月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋課で作成されています。

本月報に関する問い合わせは、

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Monthly Ocean Report is prepared by the Oceanographical Division, Climate and Marine Department, Japan Meteorological Agency.

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表紙は、1997年10月の太平洋の月平均海面水温偏差図です。

陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for October 1997 in the Pacific Ocean.

Areas of positive anomalies are shaded.

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# 海況の特徴（１９９７年１０月）

**日本近海の海況**

海面水温は，オホーツク海と四国の南を除いて平年より低く，北海道南東方では平年より1℃以上低かった。（第4図）。

黒潮は，九州から紀伊半島にかけて接岸した後，東に流れ，上・中旬には八丈島付近を流れ，常磐沖に達し，34゜Nから37゜Nの間を蛇行していた。下旬には八丈島の北を流れ，35゜N付近を東進していた（第9図）。

本州東方の親潮系の冷水は，沿岸の分枝は39.6゜N，143.5゜Eまで，沖合の分枝は39.2゜N，146.6゜Eまで，それぞれ達していた（第5図）。

**太平洋の海況**

太平洋赤道域の海面水温は，170゜W以東で平年より1℃以上高く，160゜W以東では2℃以上高かった。110゜W以東では+4℃以上の正偏差も見られた。エルニーニョ監視海域（4゜N～4゜S，150゜W～90゜W）の海面水温の平年偏差は先月（+2.9℃）よりも大きい+3.3℃であった。この値は1949年以降最大であった1982年12月に並ぶ記録である（表１）。

北太平洋の海面水温は，40゜Nに沿って日本の沿岸から130゜Wまで平年より低く，165゜Eから170゜Wにかけては-1℃以下の負偏差が見られた。50゜N以北の165゜E以東では引き続き平年より0.5℃以上高く，ベーリング海，アラスカ湾及びカリフォルニア半島沖では+1℃以上の正偏差が見られた（第16図）。

# Highlights October 1997

**Seas adjacent to Japan**

SSTs were below normal except for the Sea of Okhotsk and south of Shikoku. Negative SST anomalies exceeding -1°C were observed southeast of Hokkaido (Fig. 4).

The Kuroshio flowed along the coasts from Kyushu to Kii Peninsula, then flowed eastward. In the first and second 10-day periods of October, it flowed near Hachijo Island and took a meander path off Joban. In the last 10-day period, it flowed north of Hachijo Island and then flowed eastward along the 35°N parallel (Fig. 9).

Coastal and off-coastal branches of the Oyashio cold water extended southward to 39.6°N, 143.5°E and 39.2°N, 146.6°E, respectively (Fig. 5).

**Pacific Ocean**

In the equatorial Pacific, SSTs were more than 1°C above normal east of 170°W and more than 2°C above normal east of 160°W. Positive SST anomalies exceeding +4°C were observed east of 110°W and the SST anomaly of El Niño monitoring region (4°N-4°S, 150°W-90°W) was +3.3°C (Table 1). It was equal to the value observed in December 1982, which was the largest positive anomaly observed since 1949.

In the North Pacific, SSTs were below normal from the Japanese coast to 130°W along the 40°N parallel with negative anomalies exceeding -1°C in the area from 165°E to 170°W. In the area north of 50°N, SSTs continued to be more than 0.5°C above normal east of 165°E. Positive SST anomalies exceeding +1°C were observed in the Bering Sea, in the Gulf of Alaska, and off Baja California (Fig.16).

# 凌風丸による赤道に沿った海洋観測

## Oceanographic observations along the equator by the R/V Ryofu Maru

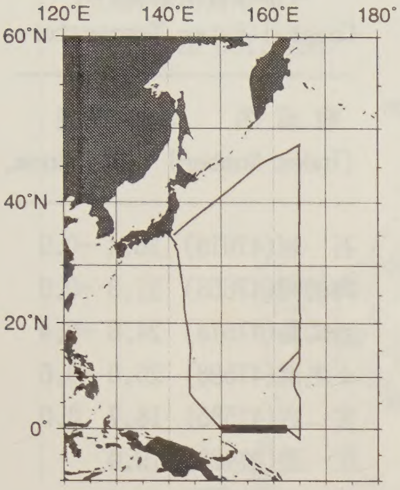



図 A. 凌風丸 1997 年 9 ～ 11 月航海の航跡図

**Fig. A**. Track chart of the R/V Ryofu Maru from September to Novermber, 1997.

気象庁の観測船「凌風丸」は, 1997 年 9 ～ 11 月に北西太平洋において海洋観測を行った。このうち, 10 月 15 ～ 19 日には, エルニーニョ現象の最盛期に近い状態にある, 西太平洋の赤道に沿った観測 (図 A 中の太線) を実施した。

今回の観測では, 28°C 以上の暖水の厚さは 50m 程度で, 昨年 11 月の観測時における 100 ～ 150m に比べて薄く, 20°C の等温線の深さも 130 ～ 150m で昨年の 180 ～ 200m に比べて 50m 程度浅かった。また, 表層海流計による流れは, 海面から 300m 深付近までほぼ全域で東向きであり, 南赤道海流にあたる海面付近の西向きの流れは見られなかった (図 B)。

The R/V Ryofu Maru of JMA performed oceanographic observations along the equator in the western Pacific in October, 1997(Fig. A). Strong warm episode (ENSO) conditions continued during the observation. The features of the observation are as follows.

The thickness of the warm water exceeding 28°C was observed about 50m, and it was thinner than that of 100–150m observed last November. The depth of 20°C isotherm was 50m shallower than that of the last November. The eastward current were observed at the depth from 300m to surface, and we could distinguish no westward flow near the surface corresponding to the South Equatorial Current (Fig. B).

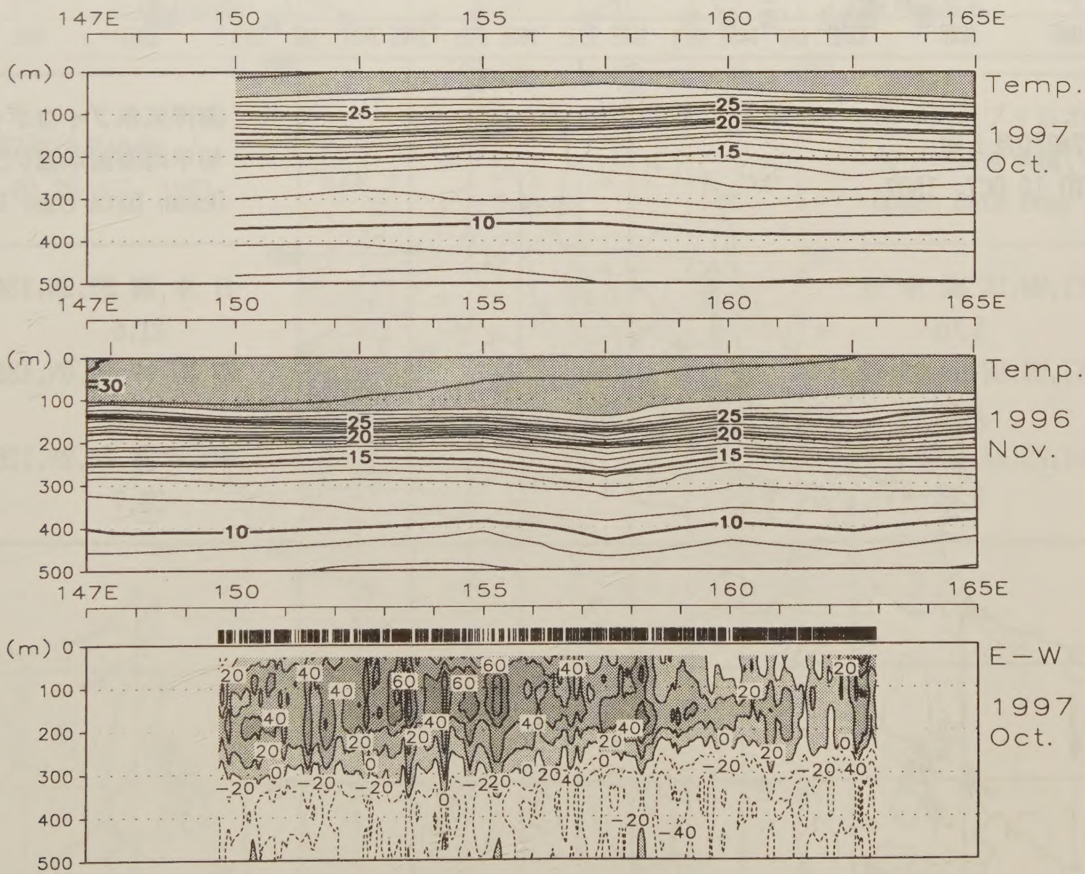
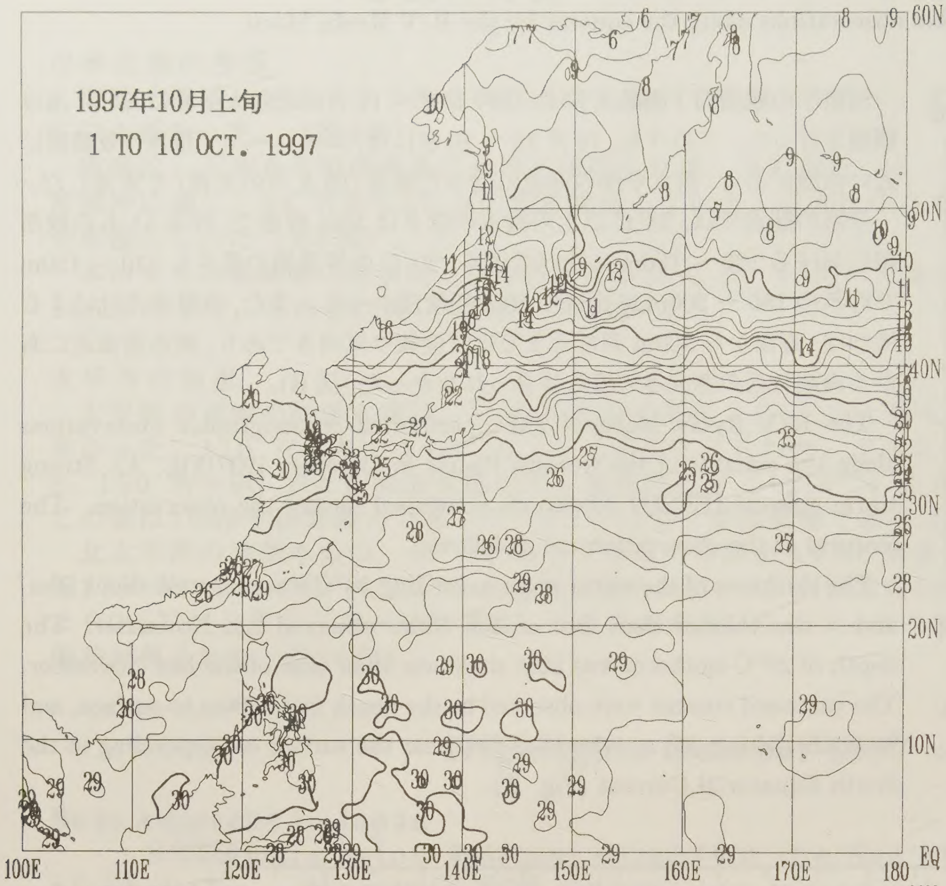


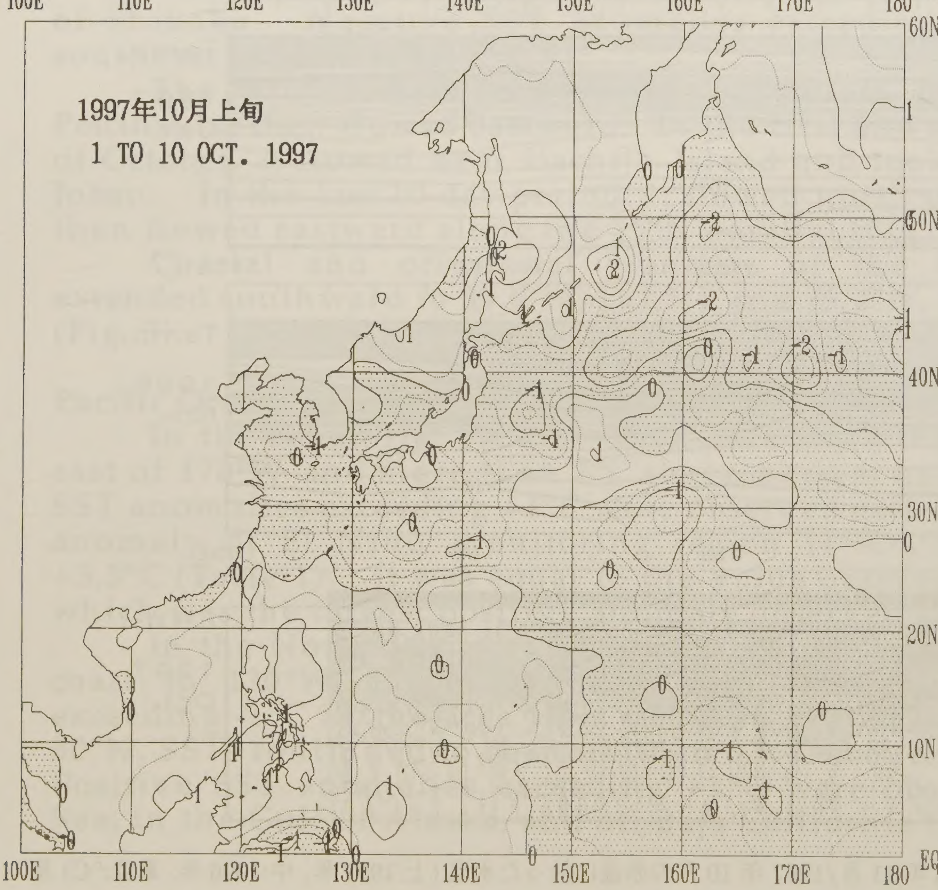

図 B. 凌風丸の観測による 1996 年 11 月/1997 年 10 月の赤道に沿った水温 (上:1997 年, 中:1996 年, 単位:°C) 及び表層海流計による 1997 年 10 月の海流の東西成分の鉛直断面図 (下, 単位: cm/s).

**Fig. B**. Vertical sections of water temperature (top: Oct., 1997, middle: Nov., 1996), and eastward/westward current (bottom: Oct., 1997) along the equator observed by the R/V Ryofu Maru. Contour interval is 1°C (top, middle) and 20cm/sec (bottom). Values greater than 28°C (top, middle) and eastward current (bottom) are shaded.




旬平均沿岸水温(℃)
Coastal Water Temperature

| 地 点 名 (Index Number) | 水温 Temp. | 偏差 Anom. |
|---|---|---|
| 石　垣(47918) | 26.4 | -0.9 |
| 御前崎(47655) | 21.3 | -0.9 |
| 八丈島(47678) | 24.6 | -0.4 |
| 小名浜(47598) | 20.0 | -0.6 |
| 宮　古(47585) | 18.7 | 0.0 |
| 江　差(47428) | 19.0 | - |
| 浜　田(47755) | 21.6 | - |

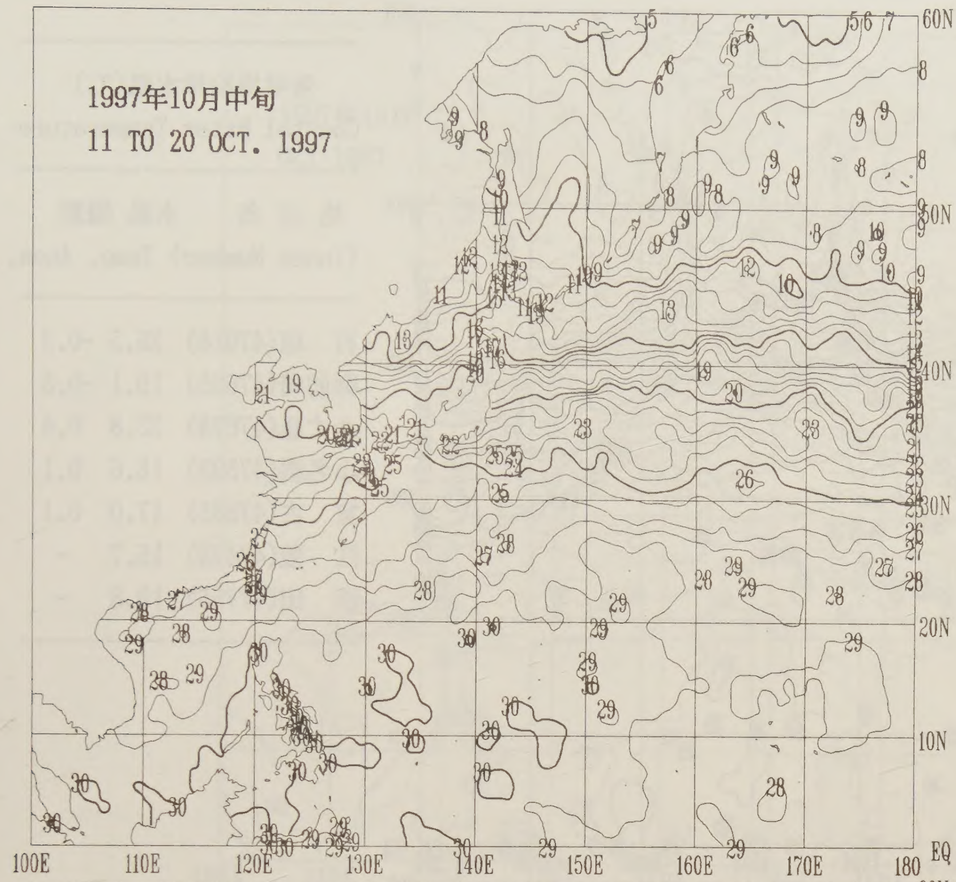



海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

| | | |
|---|---|---|
| 日本海 | 37.9N,134.5E | 21.6 |
| 四国沖 | 29.0N,135.0E | 27.3 |
| 東シナ海 | 28.2N,126.3E | 25.7 |

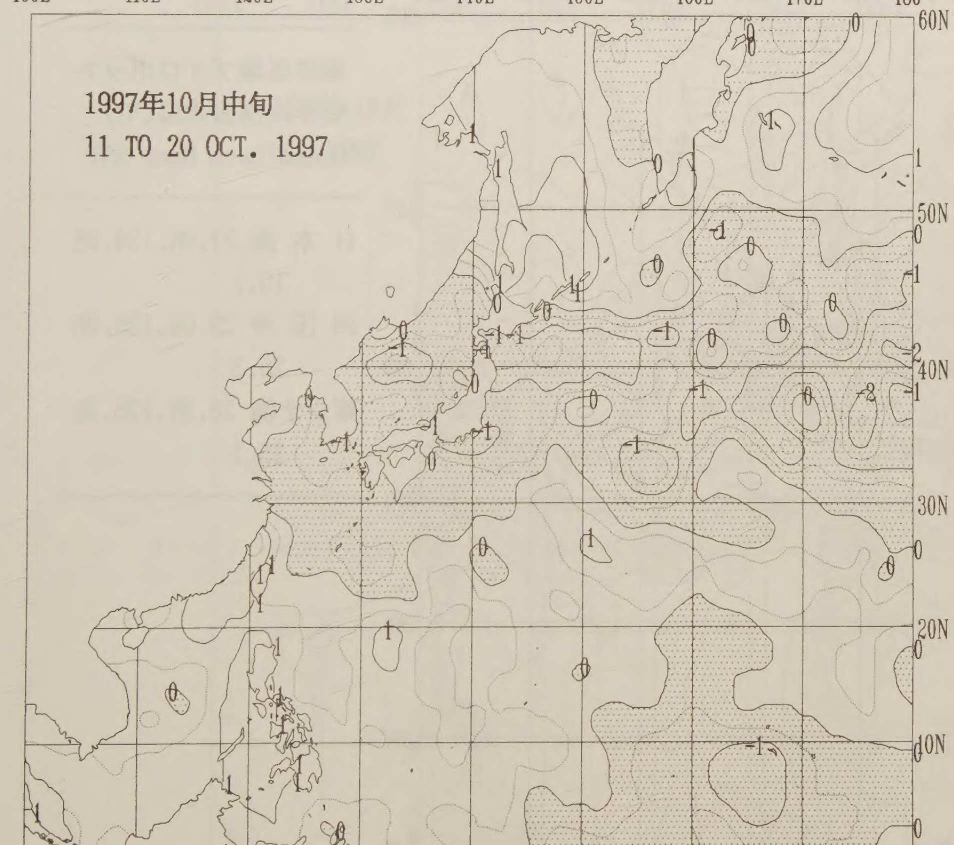
第1図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1997年10月上旬)

Fig.1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in OCT 1997. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.




旬平均沿岸水温(℃)
Coastal Water Temperature

| 地点名 (Index Number) | 水温 Temp. | 偏差 Anom. |
| --- | --- | --- |
| 石　垣(47918) | 26.4 | -0.2 |
| 御前崎(47655) | 19.8 | -1.2 |
| 八丈島(47678) | 24.0 | -0.1 |
| 小名浜(47598) | 19.4 | -0.2 |
| 宮　古(47585) | 18.2 | 0.2 |
| 江　差(47428) | 16.8 | - |
| 浜　田(47755) | 20.5 | - |

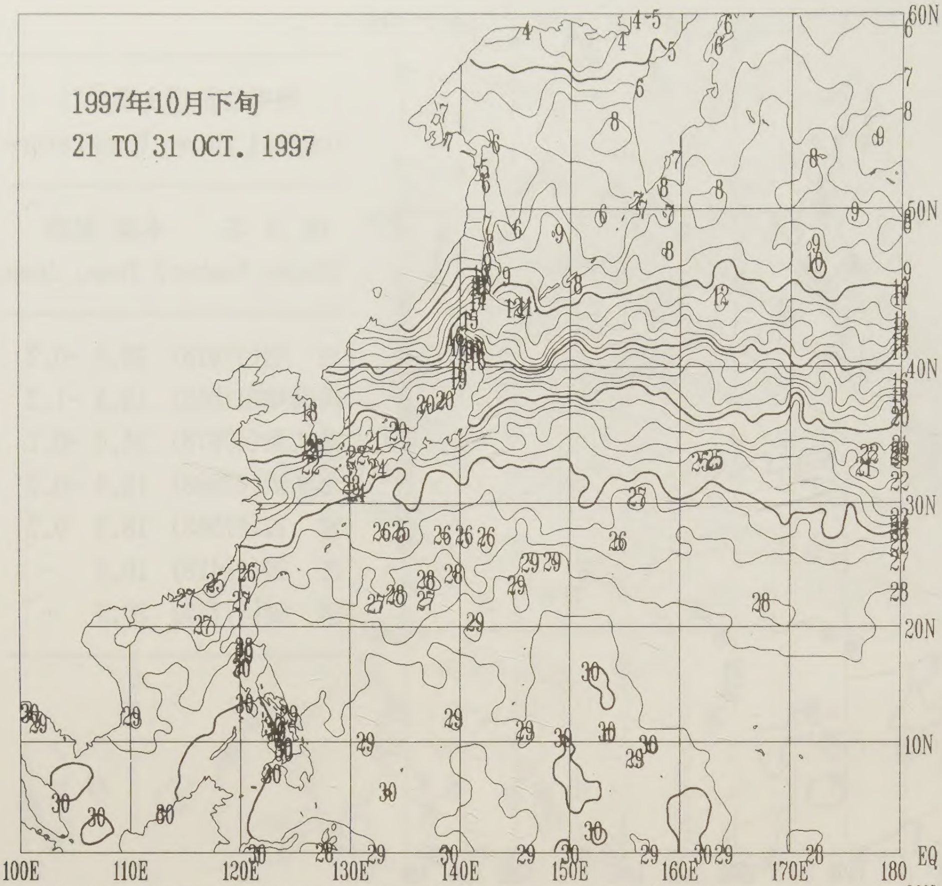



海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

| | |
| --- | --- |
| 日本海 | 37.9N,134.5E |
| | 20.2 |
| 四国沖 | 29.0N,135.0E |
| | 26.4 |
| 東シナ海 | 28.2N,126.3E |
| | 25.6 |

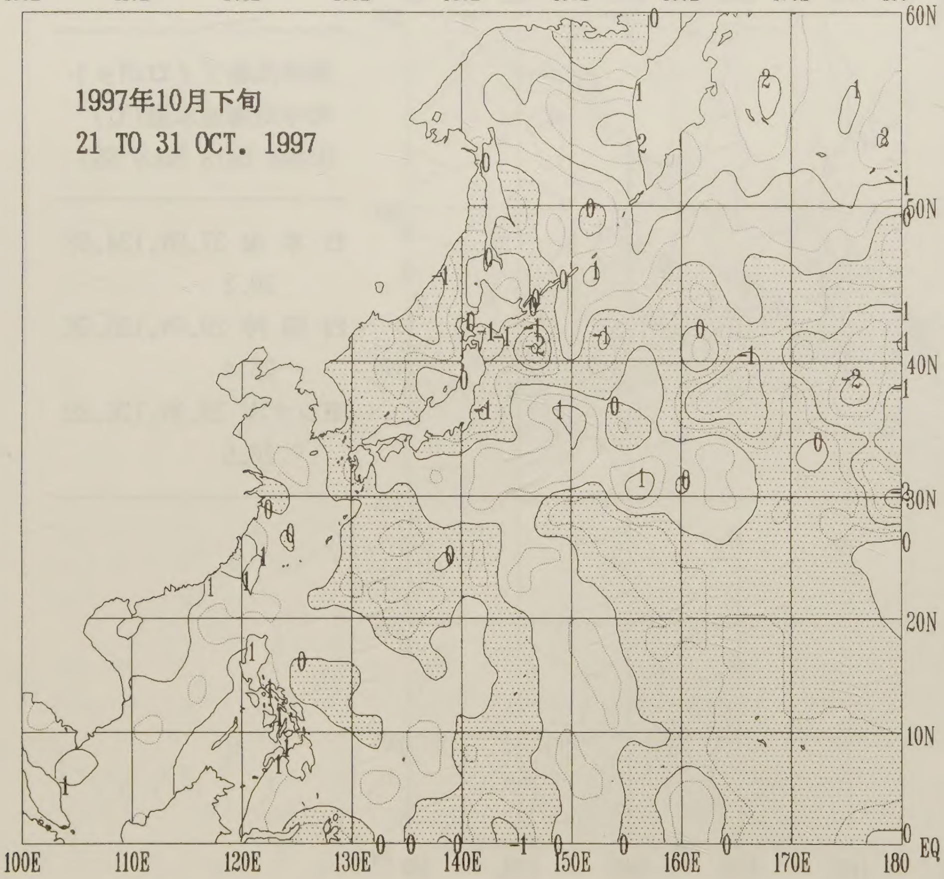
第2図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1997年10月中旬)

Fig.2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in OCT 1997. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.




旬平均沿岸水温(℃)
Coastal Water Temperature

| 地点名 (Index Number) | 水温 Temp. | 偏差 Anom. |
|---|---|---|
| 石　垣(47918) | 25.5 | -0.2 |
| 御前崎(47655) | 19.1 | -0.5 |
| 八丈島(47678) | 23.8 | 0.4 |
| 小名浜(47598) | 18.6 | 0.1 |
| 宮　古(47585) | 17.0 | 0.1 |
| 江　差(47428) | 15.7 | - |
| 浜　田(47755) | 19.8 | - |

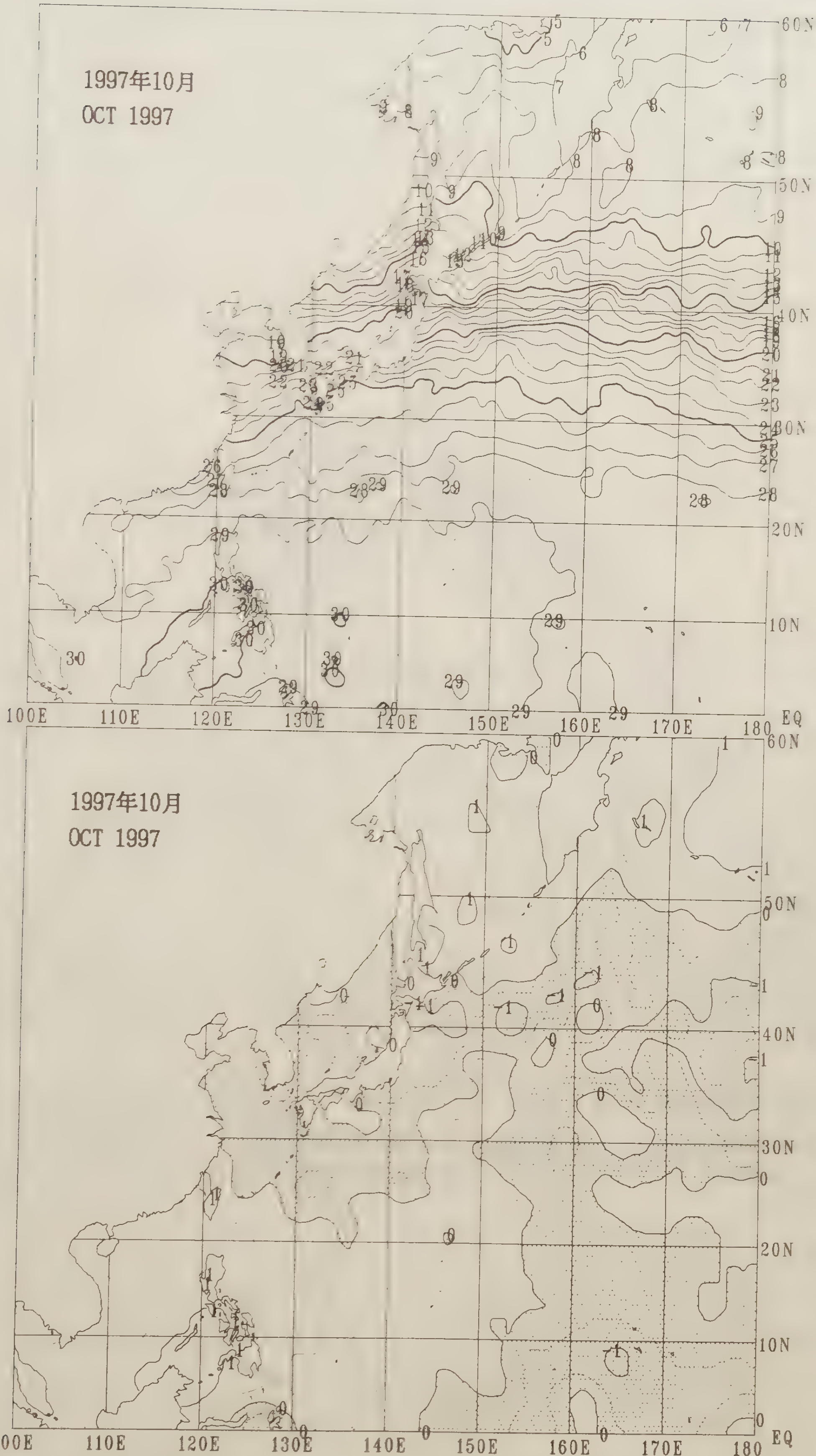



海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

| | | |
|---|---|---|
| 日本海 | 37.9N,134.5E | 19.1 |
| 四国沖 | 29.0N,135.0E | 25.3 |
| 東シナ海 | 28.2N,126.3E | 25.7 |

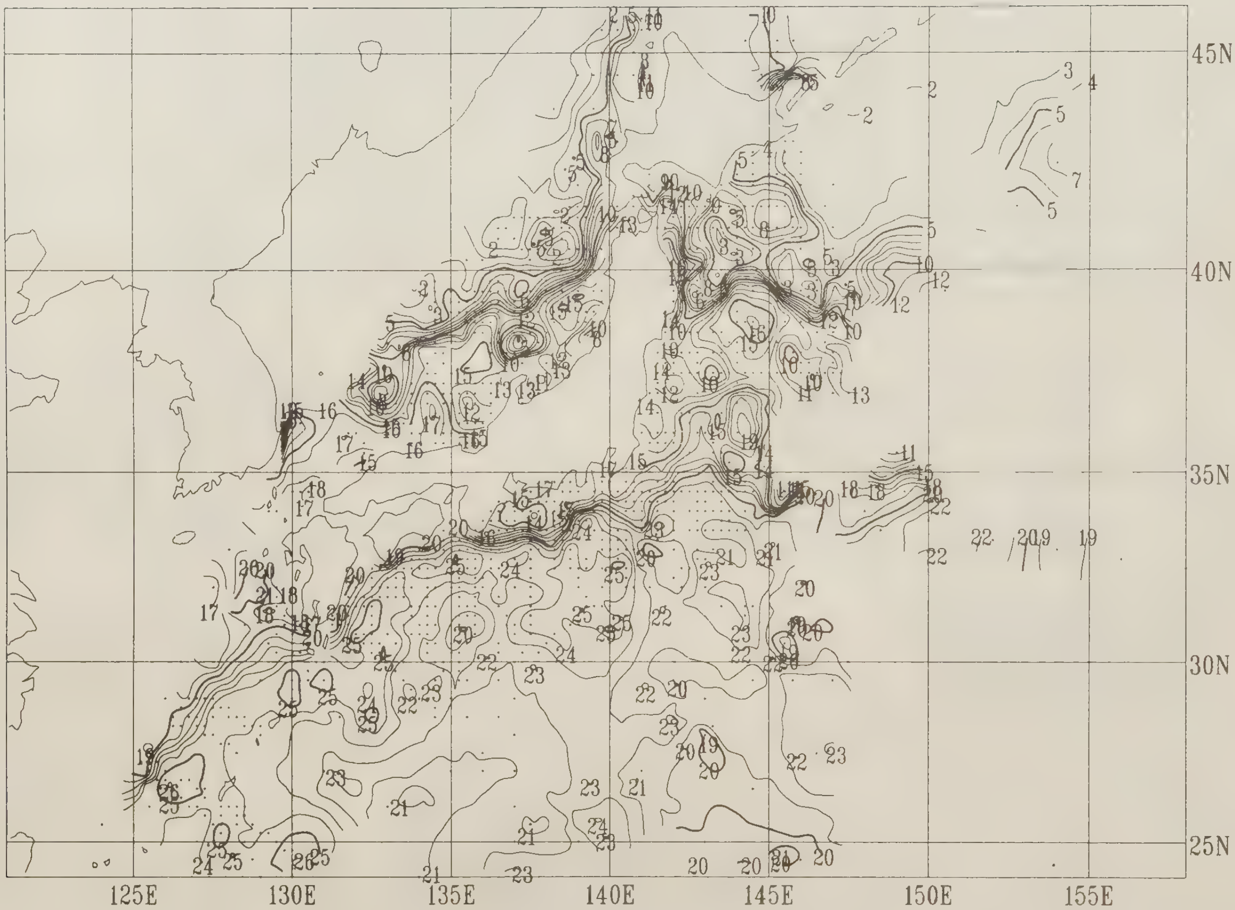
第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1997年10月下旬)

Fig.3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in OCT 1997. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



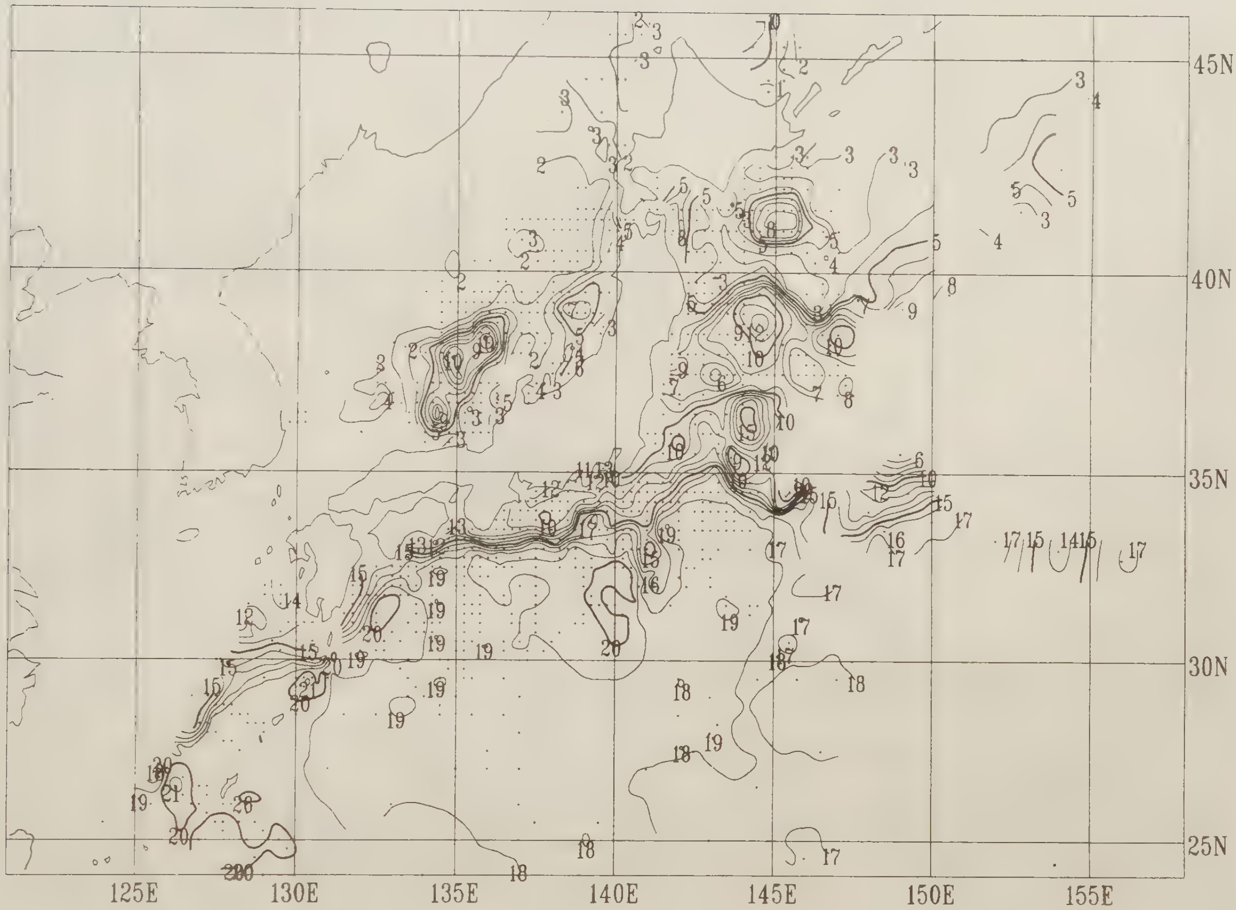

第4図 北西太平洋月平均海面水温図(上)及び偏差図(下)(1997年10月)

Fig.4 Monthly mean SST (top) and anomalies (bottom) in the western North Pacific for OCT 1997. Anomalies are computed from the JMA climatology (1961-1990). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



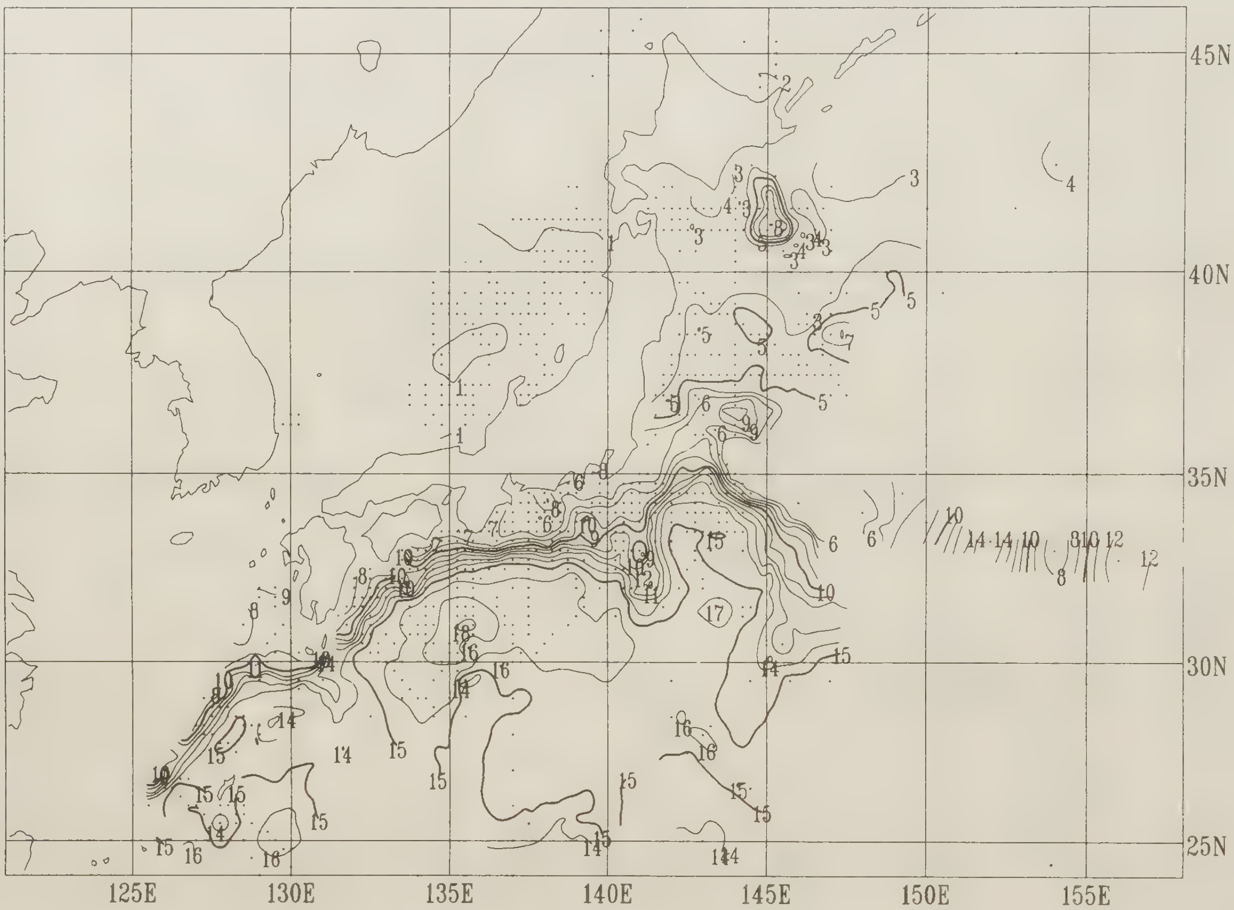

第5図　日本近海表層水温図(深さ100m)（1997年10月）

Fig.5 Subsurface (100m) temperatures in the seas adjacent to Japan for OCT 1997. Contour interval is 1°C. Observation points are denoted by dots.



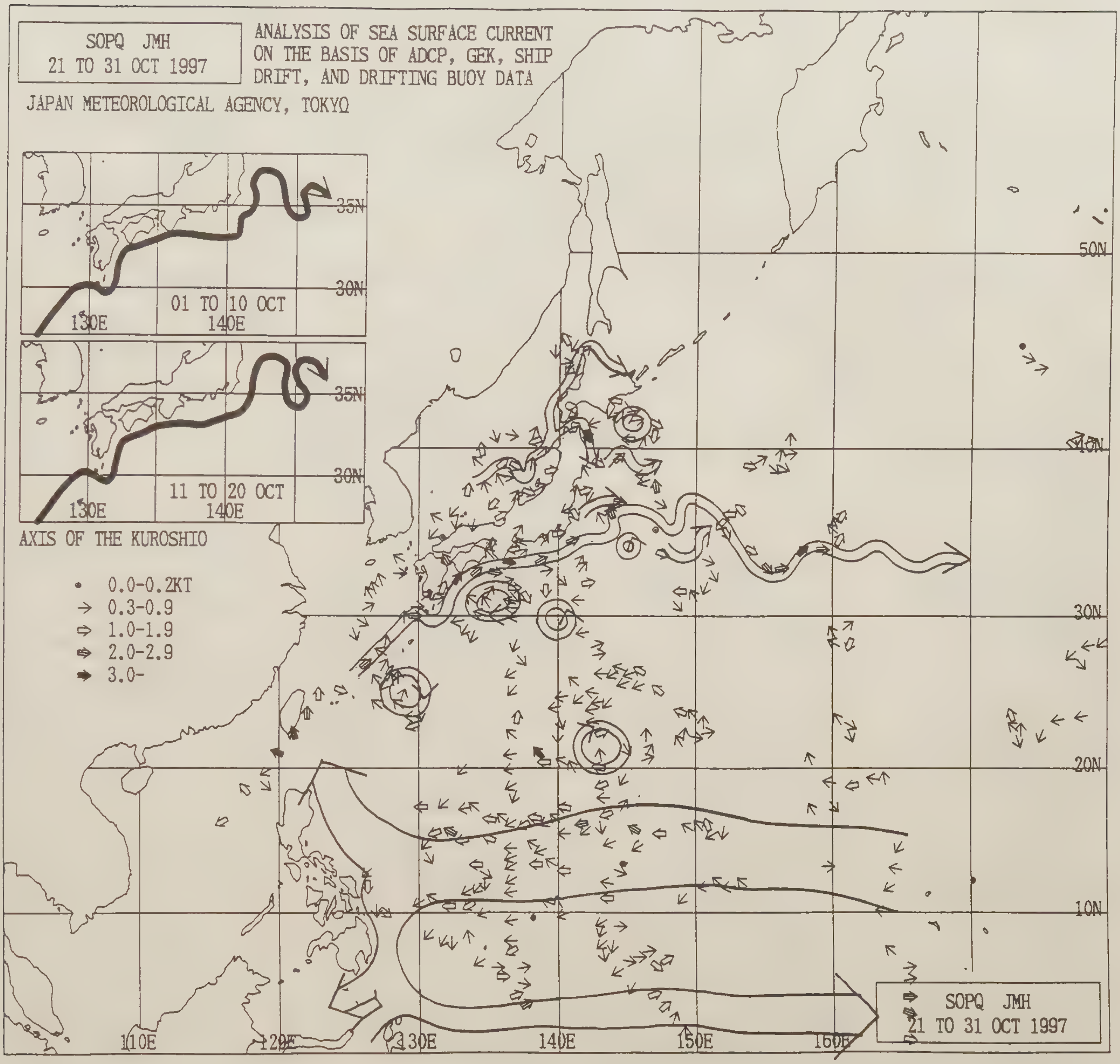

第6図　日本近海表層水温図(深さ200m) (1997年10月)

Fig.6 Subsurface (200m) temperatures in the seas adjacent to Japan for OCT 1997. Contour interval is 1°C. Observation points are denoted by dots.



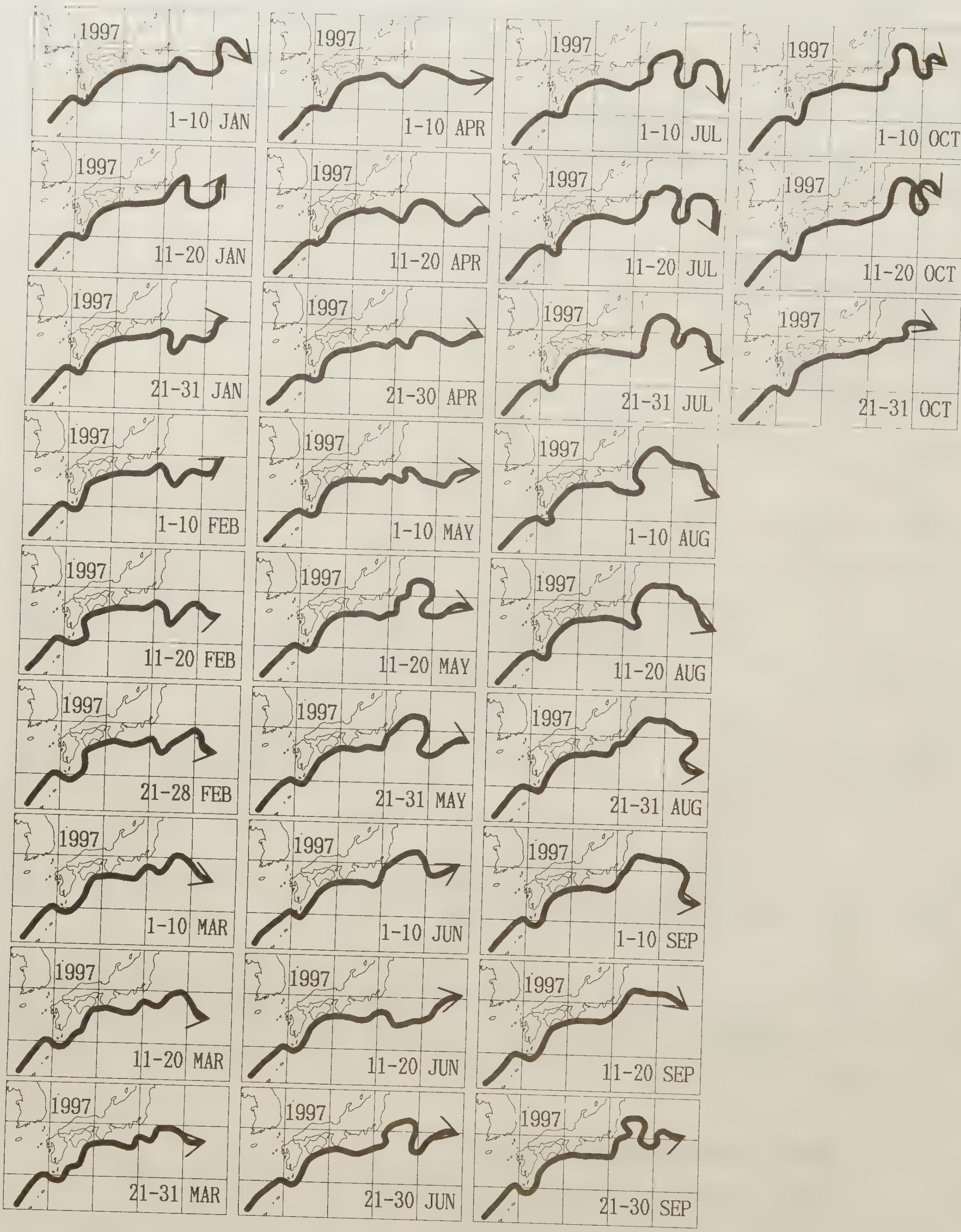

第7図　日本近海表層水温図(深さ400m)（1997年10月）

Fig.7 Subsurface (400m) temperatures in the seas adjacent to Japan for OCT 1997. Contour interval is 1°C. Observation points are denoted by dots.



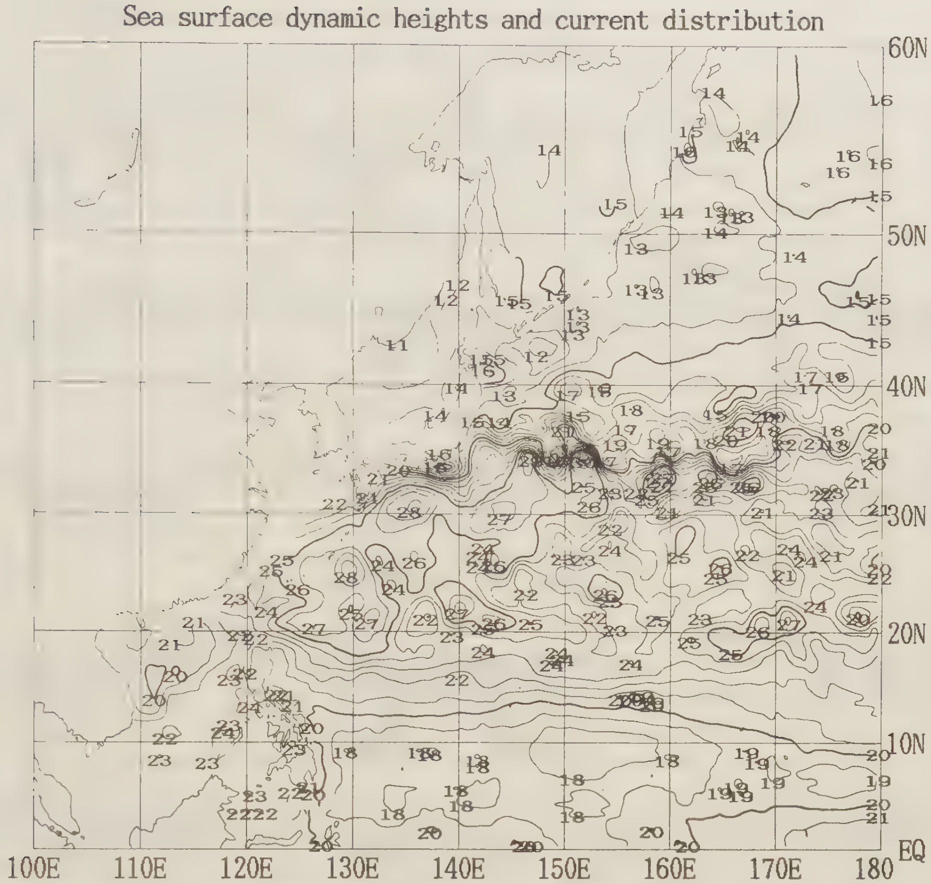

第8図　北西太平洋海流図（1997年10月下旬）

Fig.8 Analysis of the sea surface current in the western North Pacific for the 3rd ten-day period in OCT 1997. Small arrows indicate in situ observations. Major currents such as the Kuroshio and the North Equatorial Current are denoted by larger open arrows.



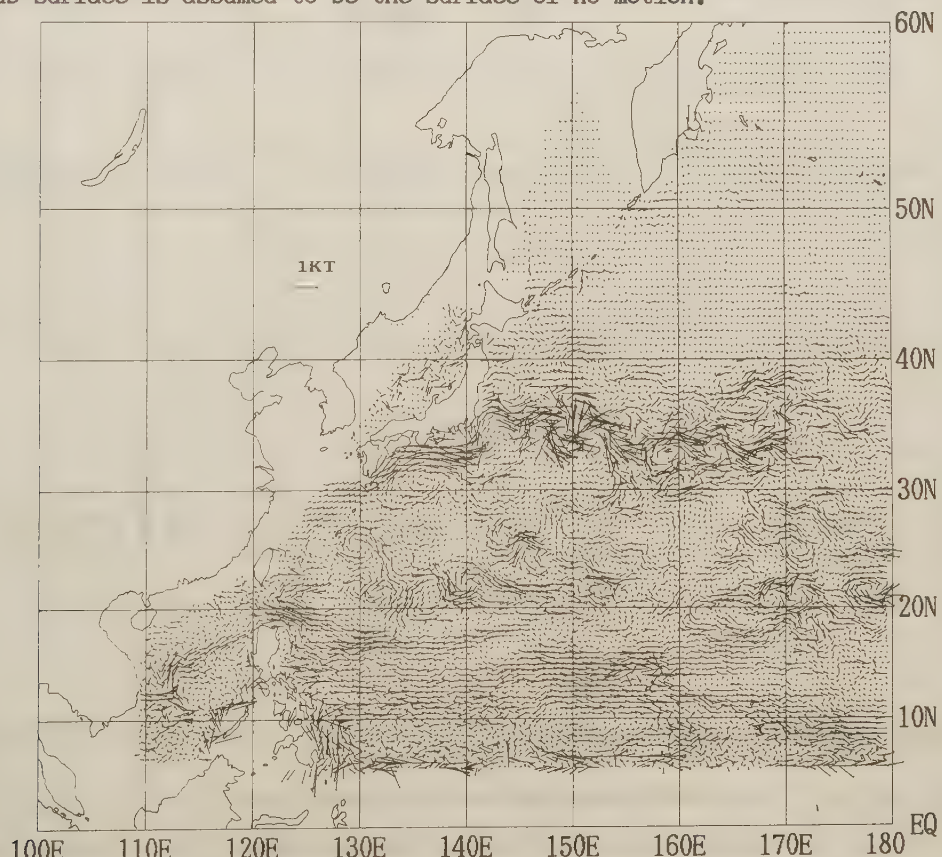

第9図 旬別黒潮流軸図

Fig.9 Location of the Kuroshio axis



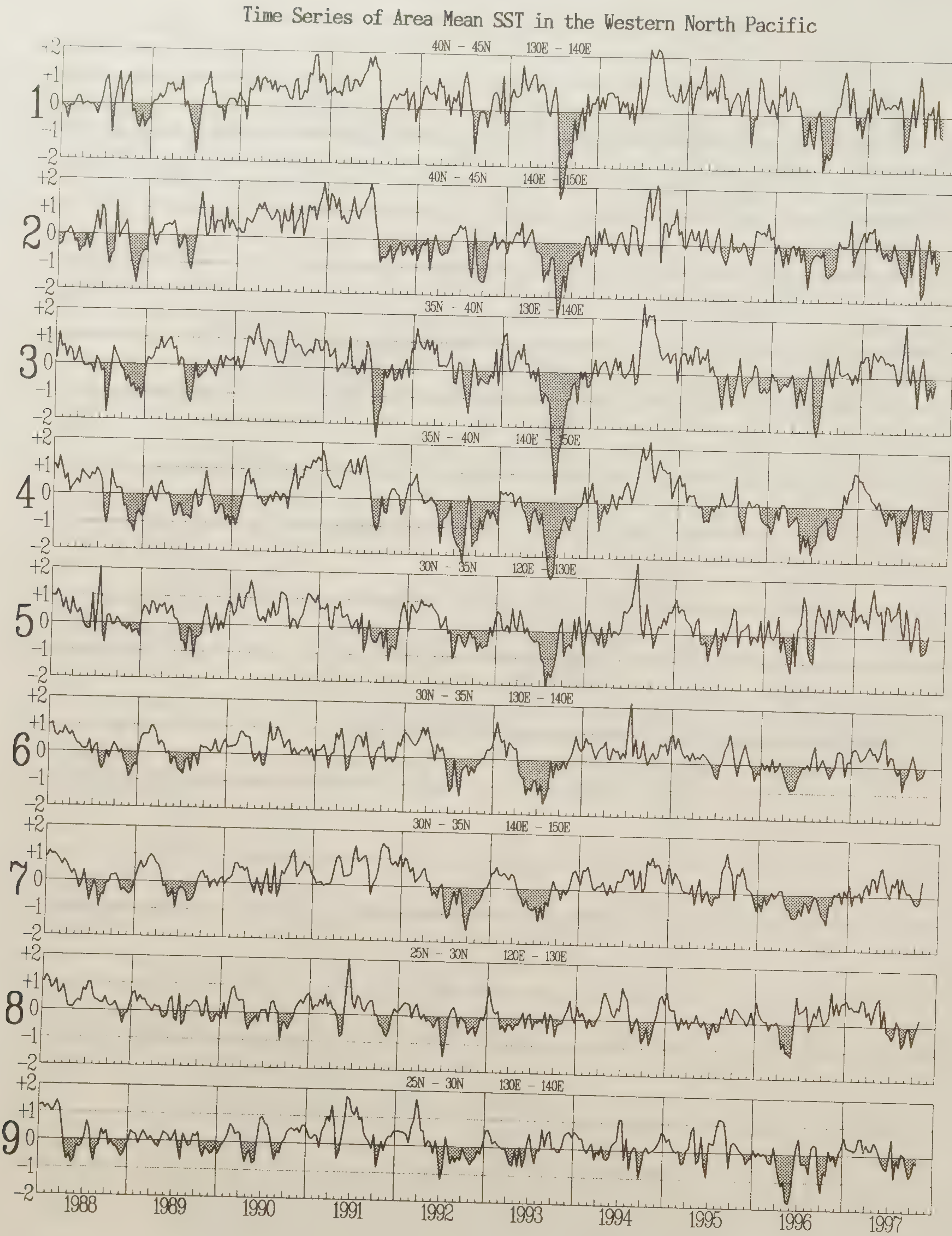

第10図 北西太平洋力学的海面高度分布図(1997年10月8日)

Fig.10 Sea surface dynamic heights (10cm) in the western North Pacific derived from the altimeter data of TOPEX/POSEIDON (OCT 8, 1997).
1500db surface is assumed to be the surface of no motion.



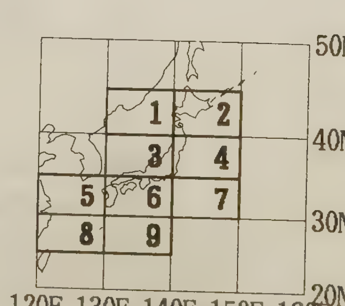

第11図 北西太平洋海流ベクトル図(1997年10月8日)

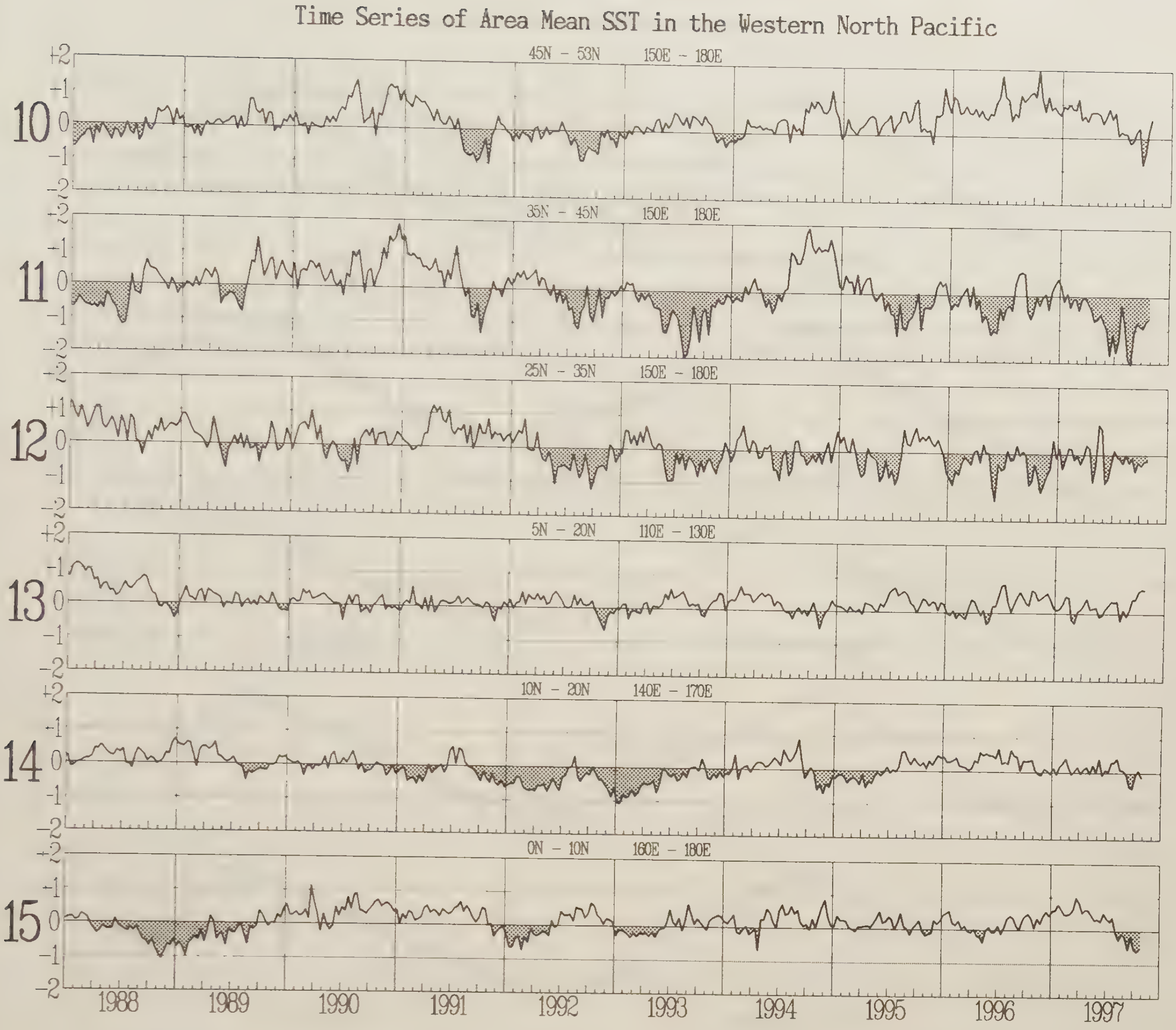
Fig.11 Sea surface current vectors in the western North Pacific (OCT 8, 1997). Vectors are derived from the sea surface dynamic heights from TOPEX/POSEIDON and subsurface temperature distribution assuming the geostrophic relation.




第12図　海域別旬平均海面水温平年偏差時系列図

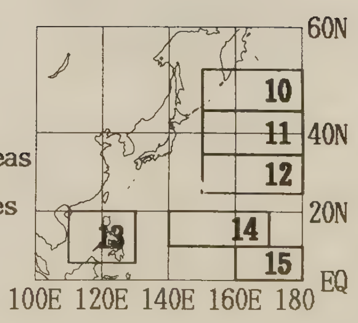
Fig.12 Time series of the ten-day mean sea surface temperature anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1961-90).

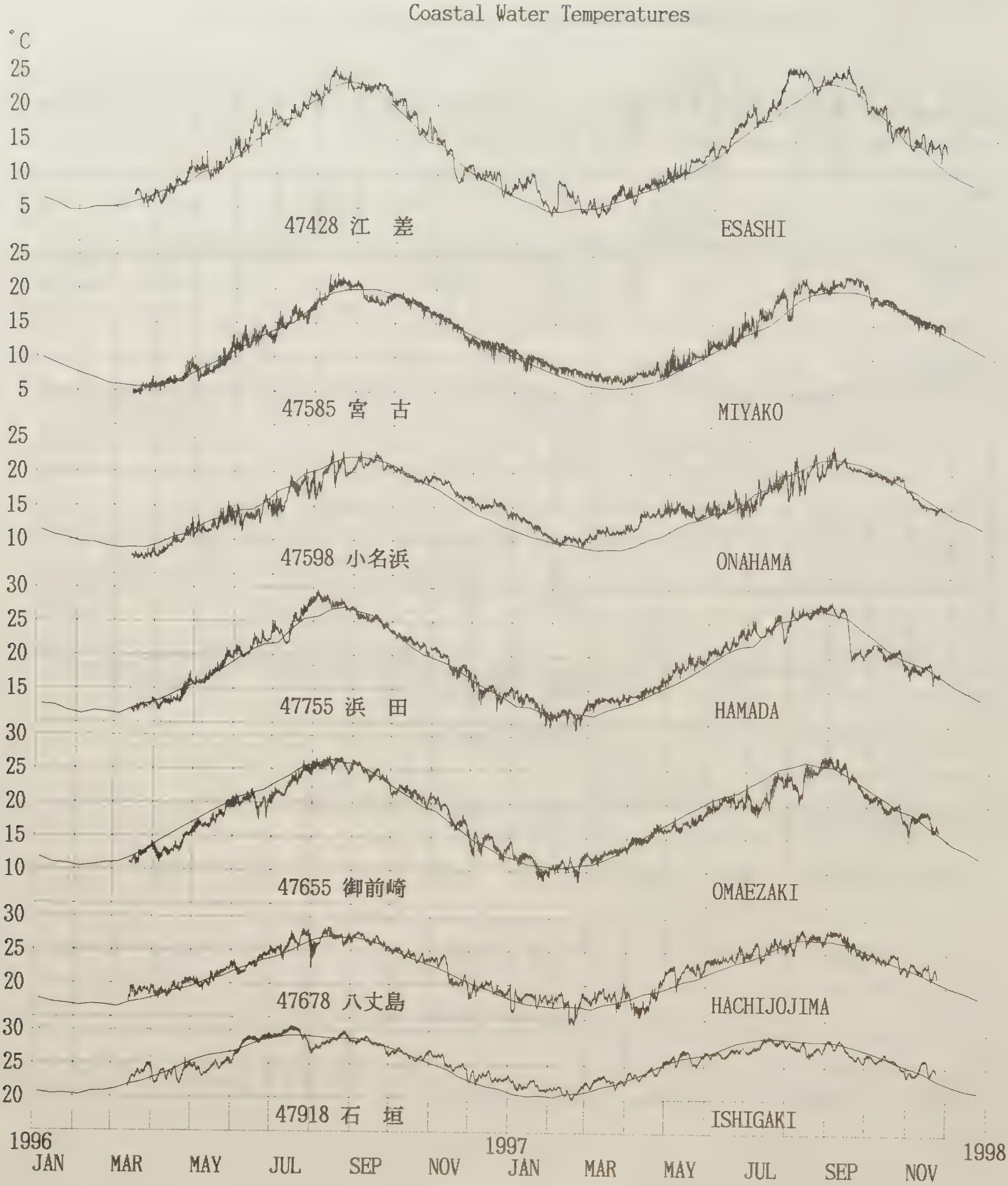


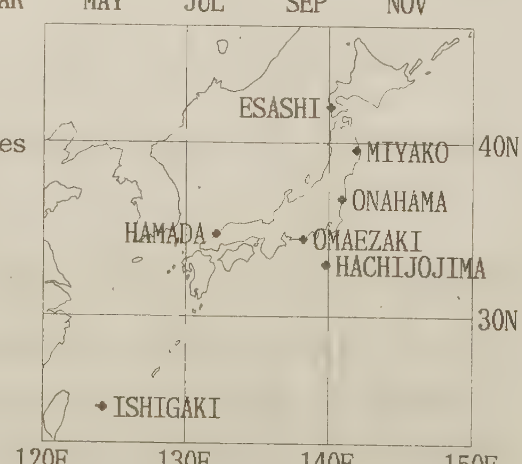



第12図　海域別旬平均海面水温平年偏差時系列図（つづき）

Fig.12 (continue) Time series of the ten-day mean sea surface temperature anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1961-90).

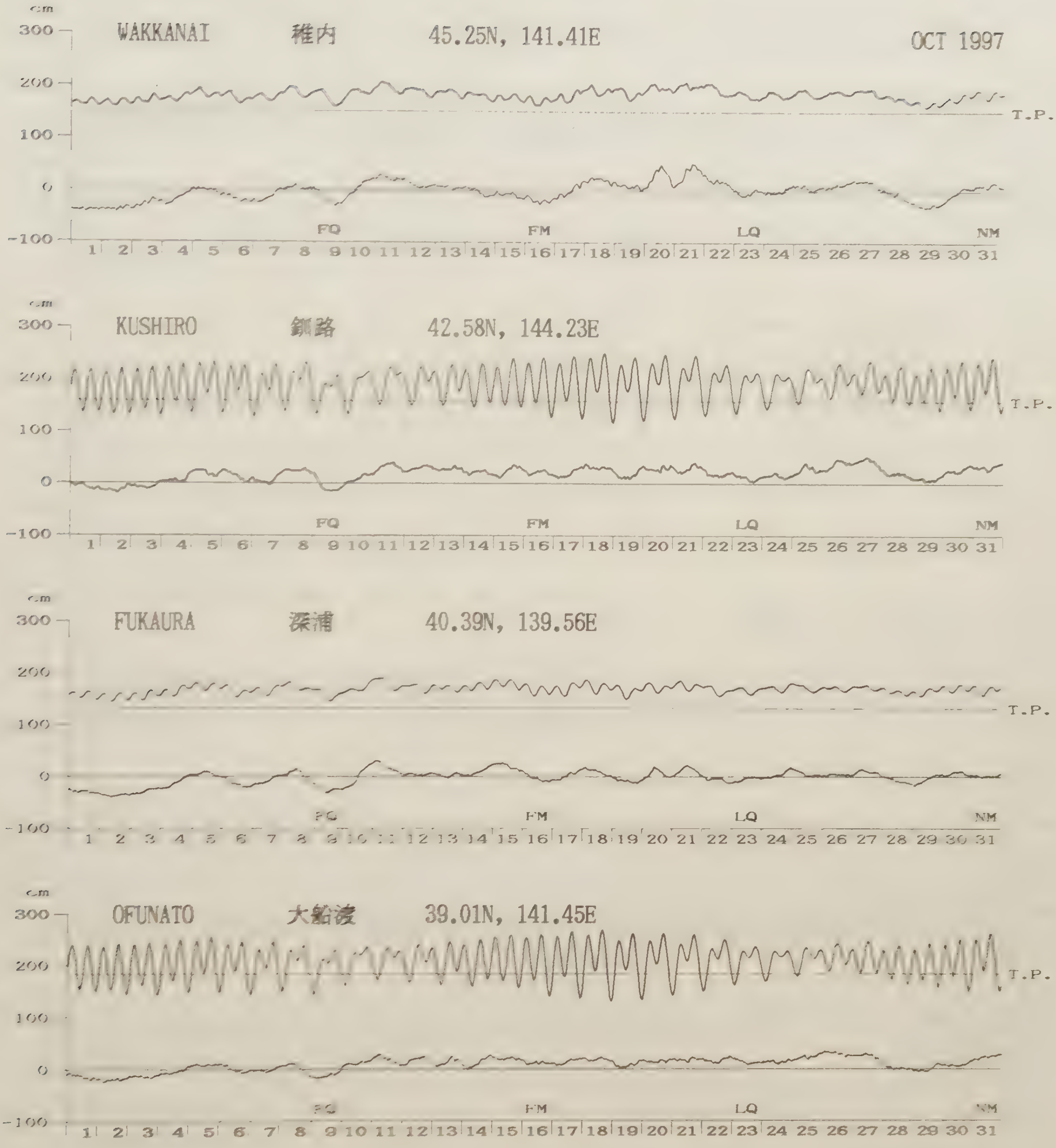





第13図 沿岸水温時系列図

Fig.13 Time series of hourly coastal water temperatures (°C) measured at 7 coastal stations of the JMA shown in the right panel.
Thin lines show ten-day mean climatology.

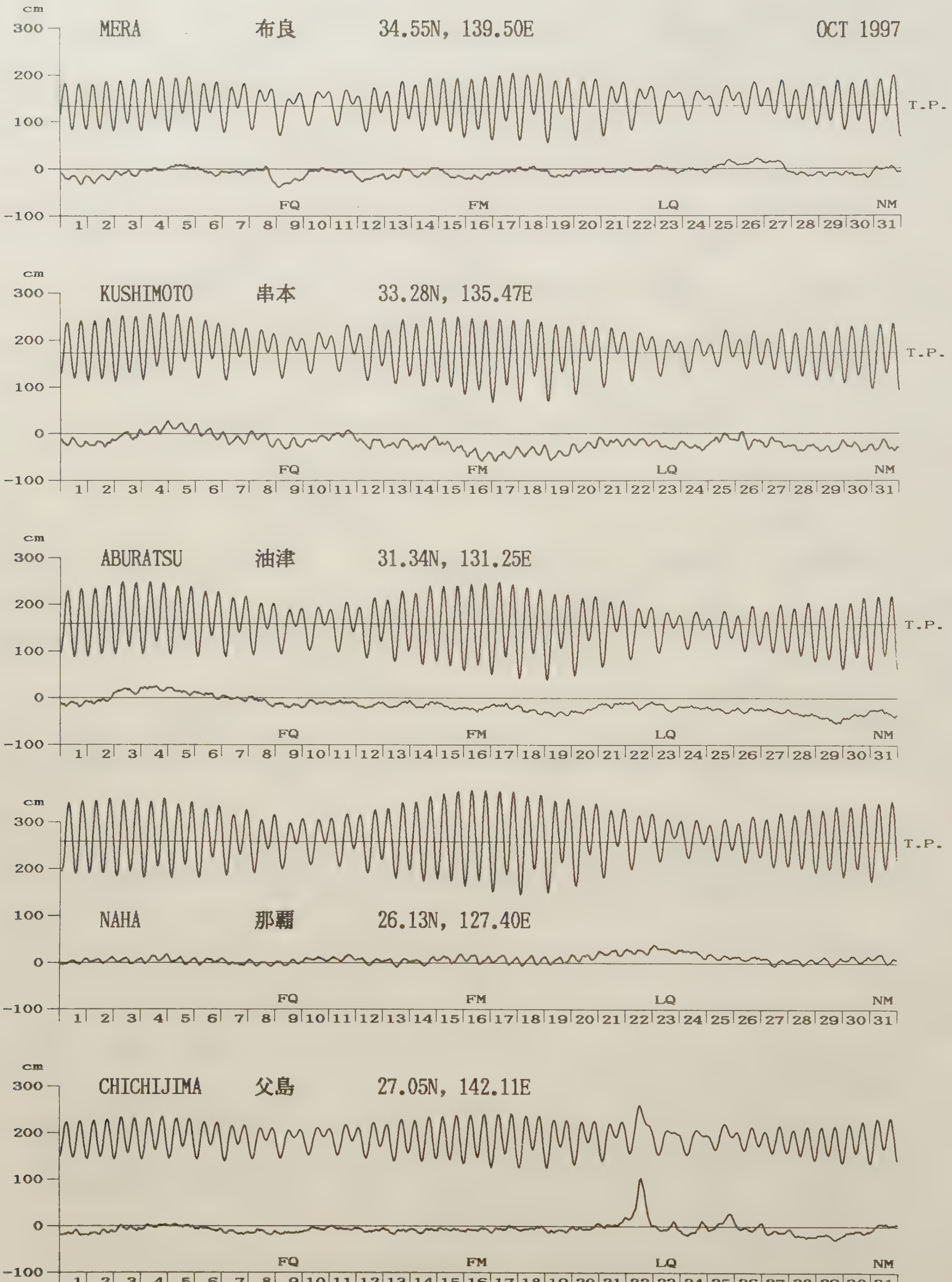




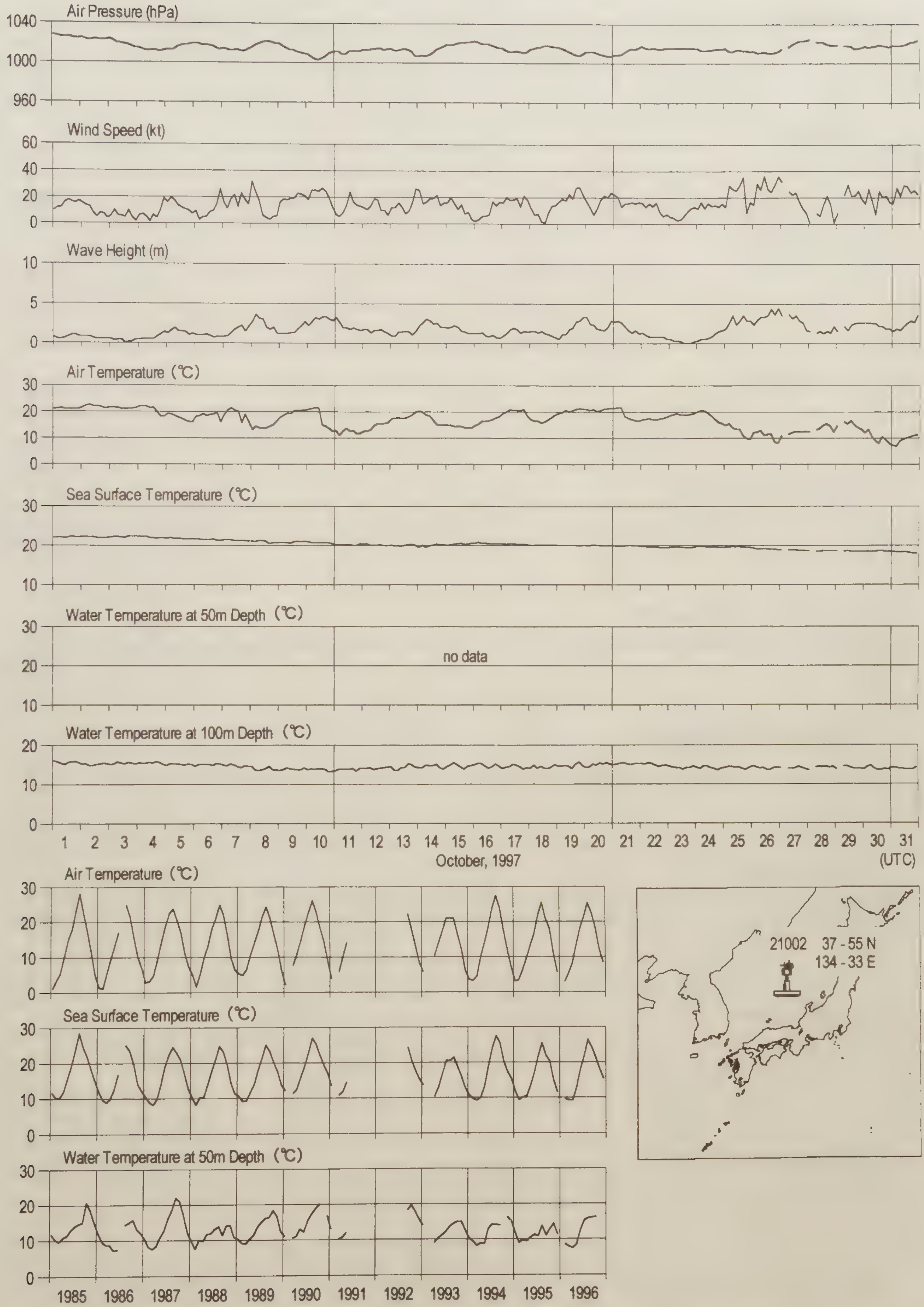


第14図 沿岸潮位時系列図（1997年10月）

Fig.14 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.
Sea level anomalies are two times values of the differences between the observations and the predicted astronominal tide.
FM: full moon, FQ: first quarter
NM: new moon, LQ: last quarter
T.P.: Mean sea level of Tokyo Bay (Tokyo Peil)

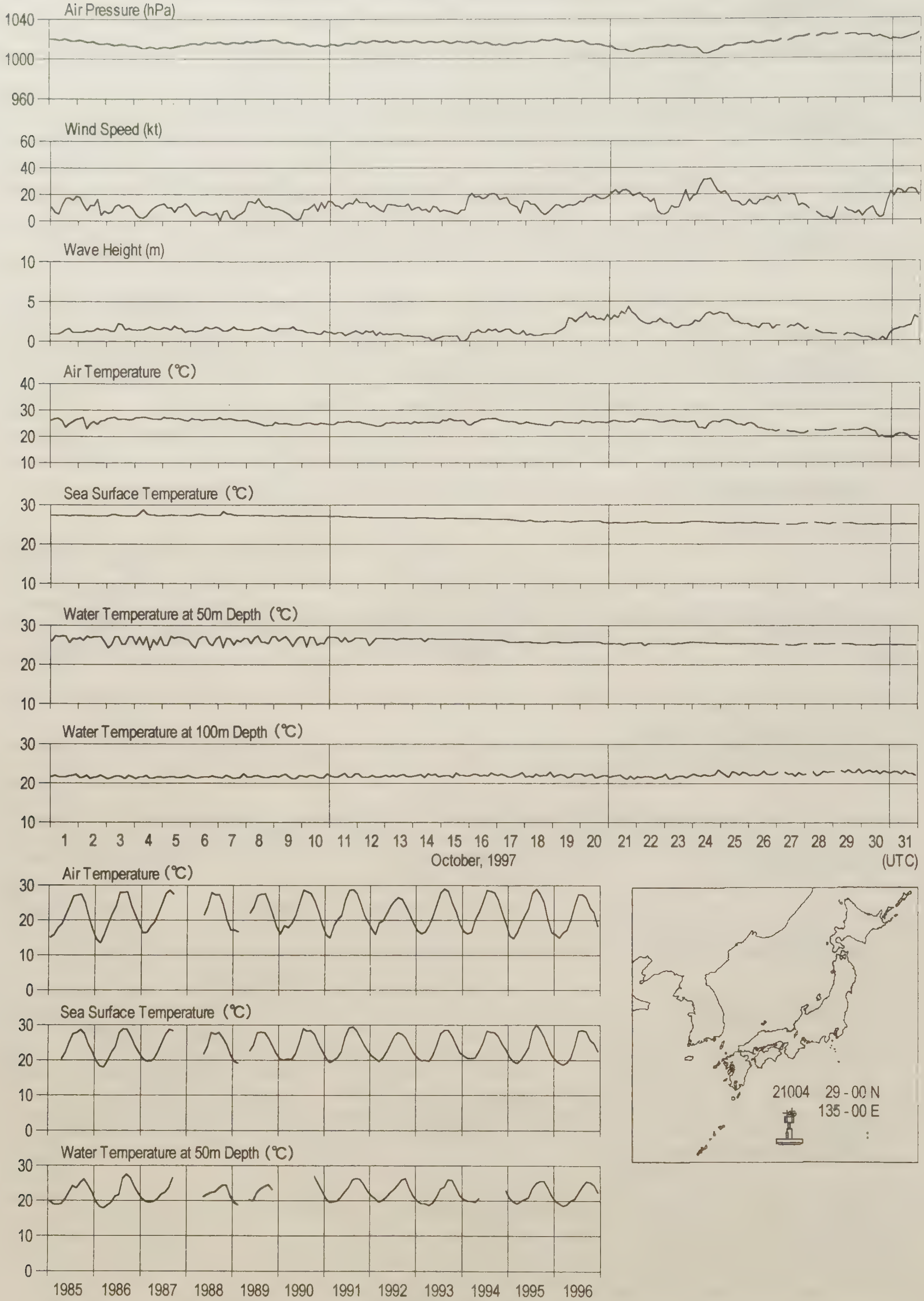



第14図 つづき
Fig.14 continue



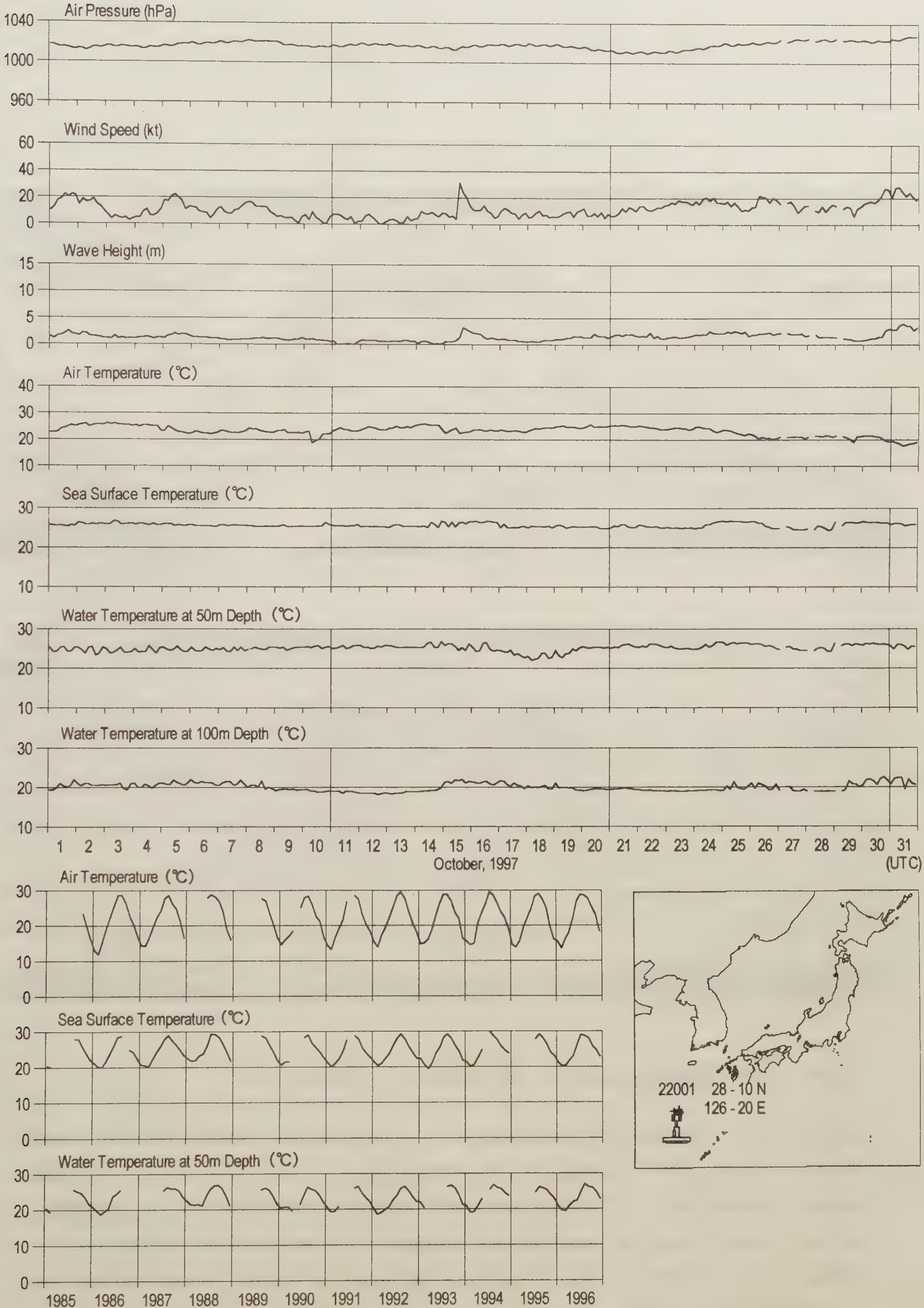

第15図　海洋気象ブイロボットによる観測要素の時系列図（日本海：21002）
上段は３時間毎の観測値を、下段は月平均値を示す。

Fig. 15　Time series of JMA buoy observation in the Japan Sea (WMO ID No. 21002). The upper panel shows three hourly observation and the lower panel shows the monthly mean data.



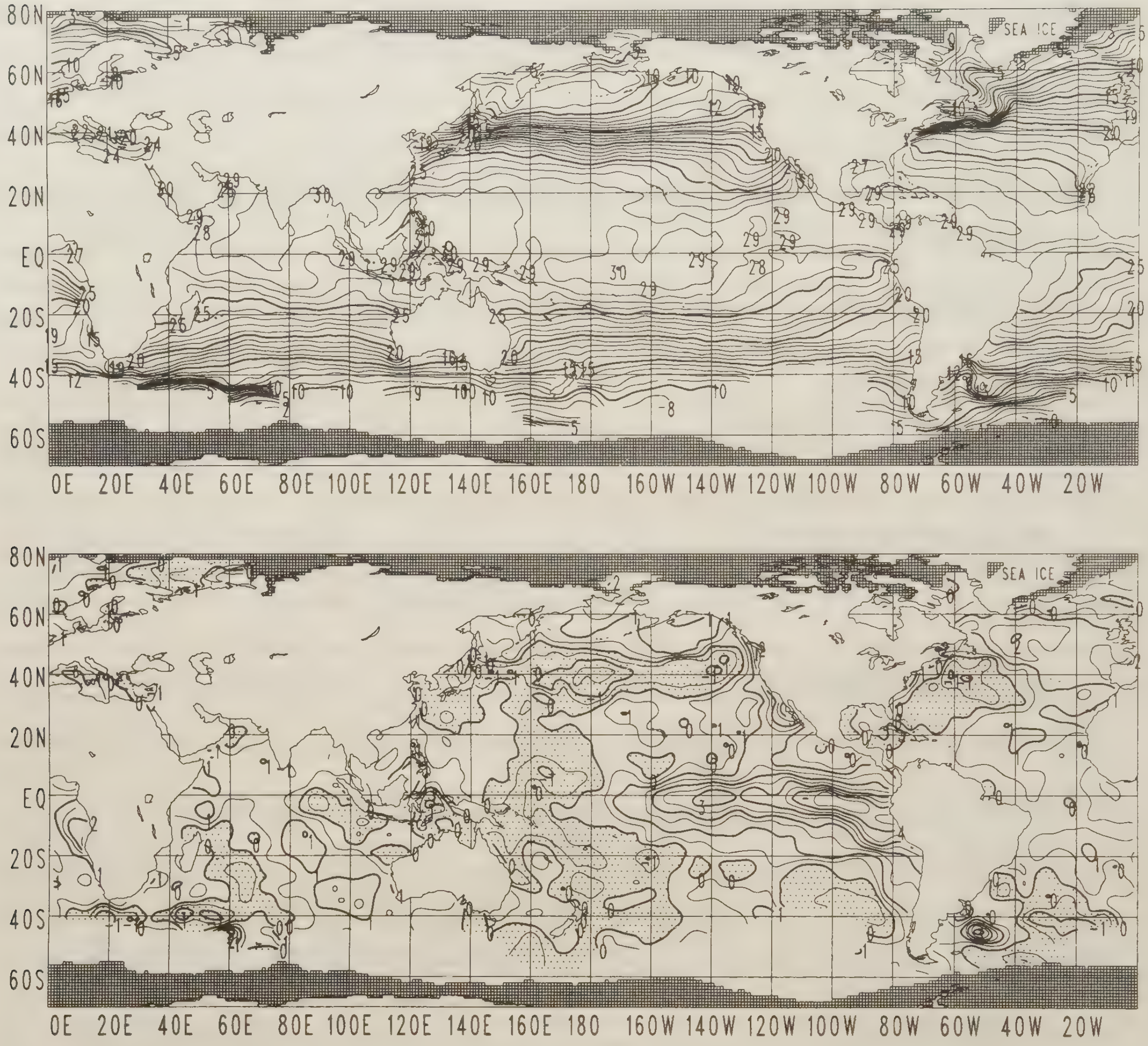

第15図　海洋気象ブイロボットによる観測要素の時系列図（四国沖：21004）
上段は３時間毎の観測値を、下段は月平均値を示す。

Fig. 15　Time series of JMA buoy observation south of Shikoku (WMO ID No. 21004).
The upper panel shows three hourly observation and the lower panel shows the monthly mean data.



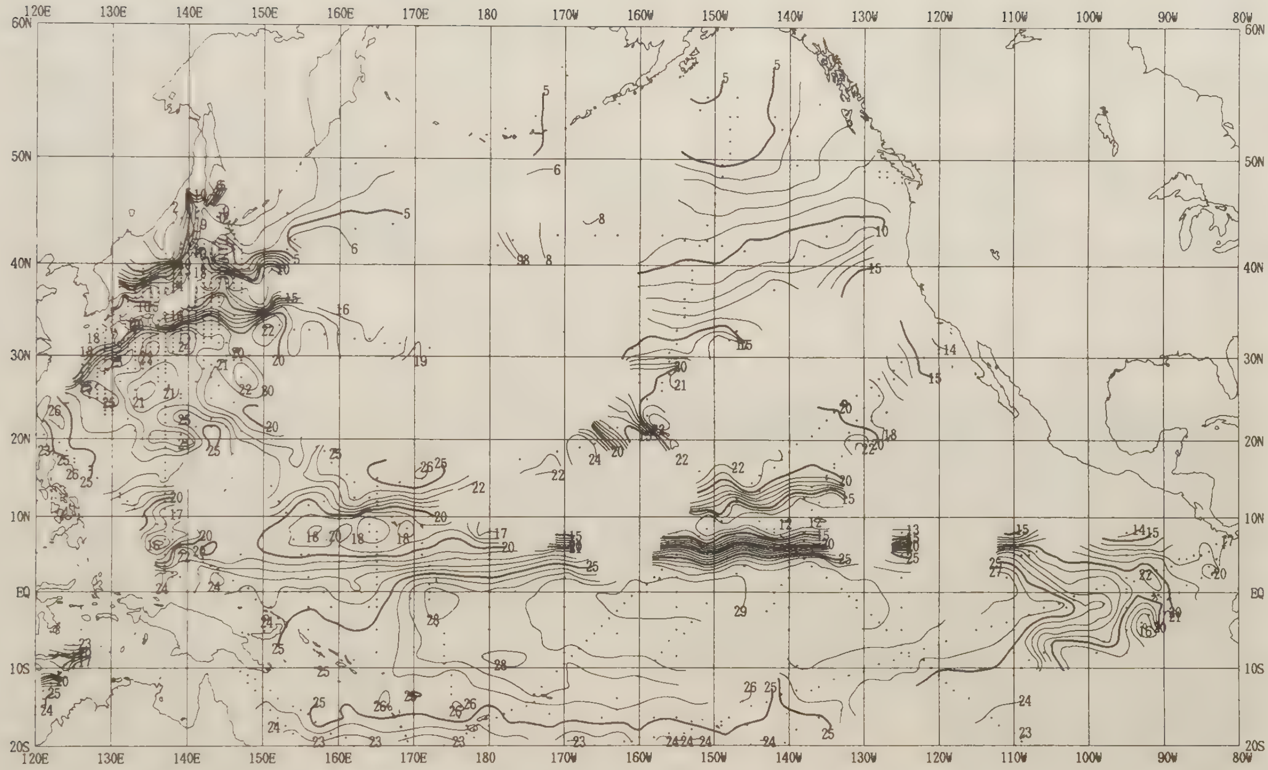

第15図　海洋気象ブイロボットによる観測要素の時系列図（東シナ海：22001）
　　　　上段は３時間毎の観測値を、下段は月平均値を示す。

Fig. 15　Time series of JMA buoy observation in the East China Sea (WMO ID No. 22001). The upper panel shows three hourly observation and the lower panel shows the monthly mean data.



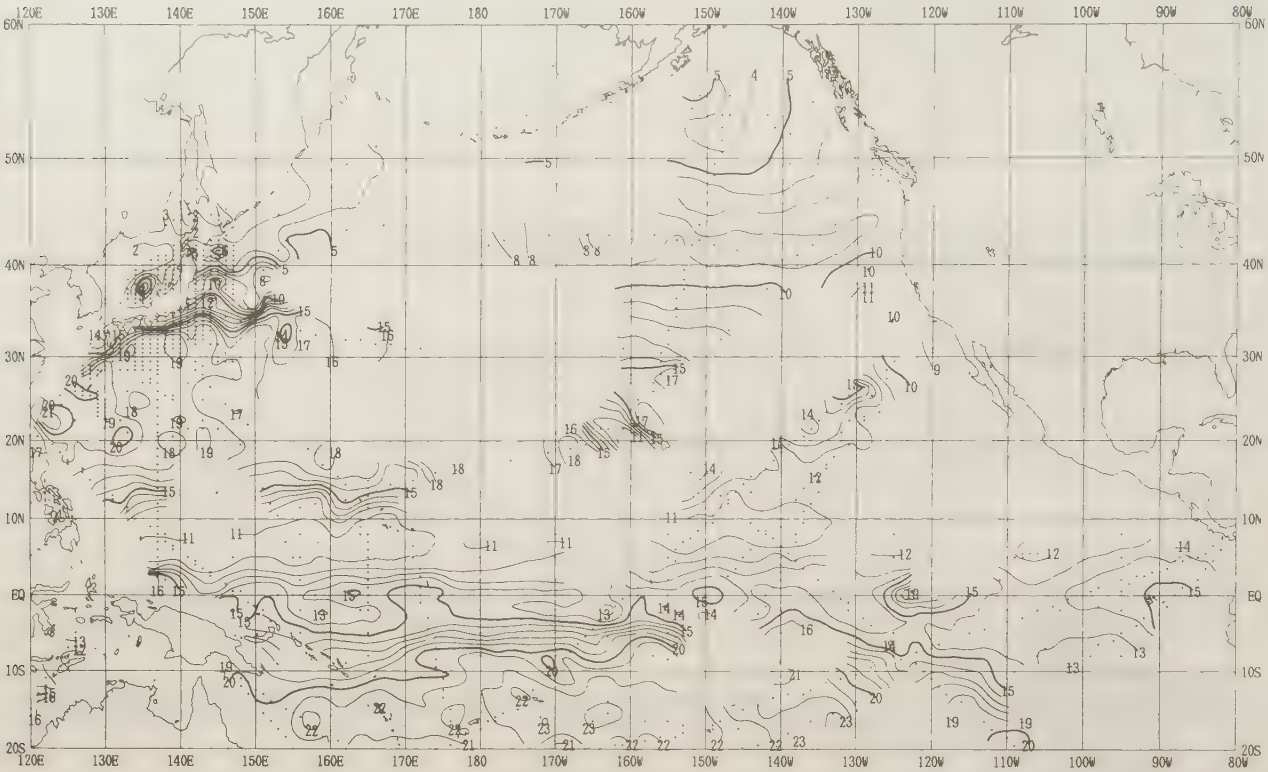

第16図　全球月平均海面水温図（上）及び偏差図（下）（1997年10月）

Fig.16 Monthly mean sea surface temperature over the global ocean (top) and anomalies (bottom) for OCT 1997. Anomalies are computed from the JMA climatology (1961-1990). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown by thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).



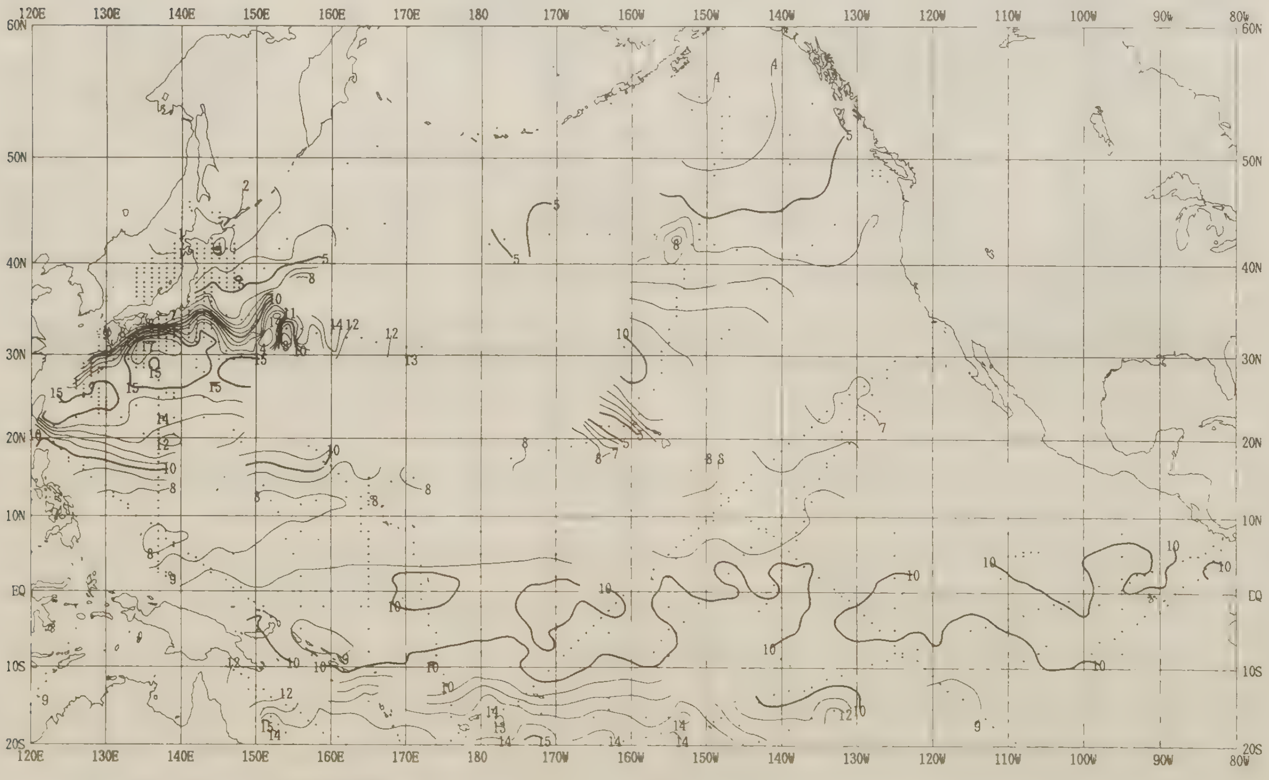

第17図　太平洋表層水温図(深さ100m)(1997年10月)

Fig.17 Subsurface (100m) temperatures in the Pacific Ocean for OCT 1997.
Contour interval is 1°C. Observation points are denoted by dots.



第18図　太平洋表層水温図(深さ200m)（1997年10月）

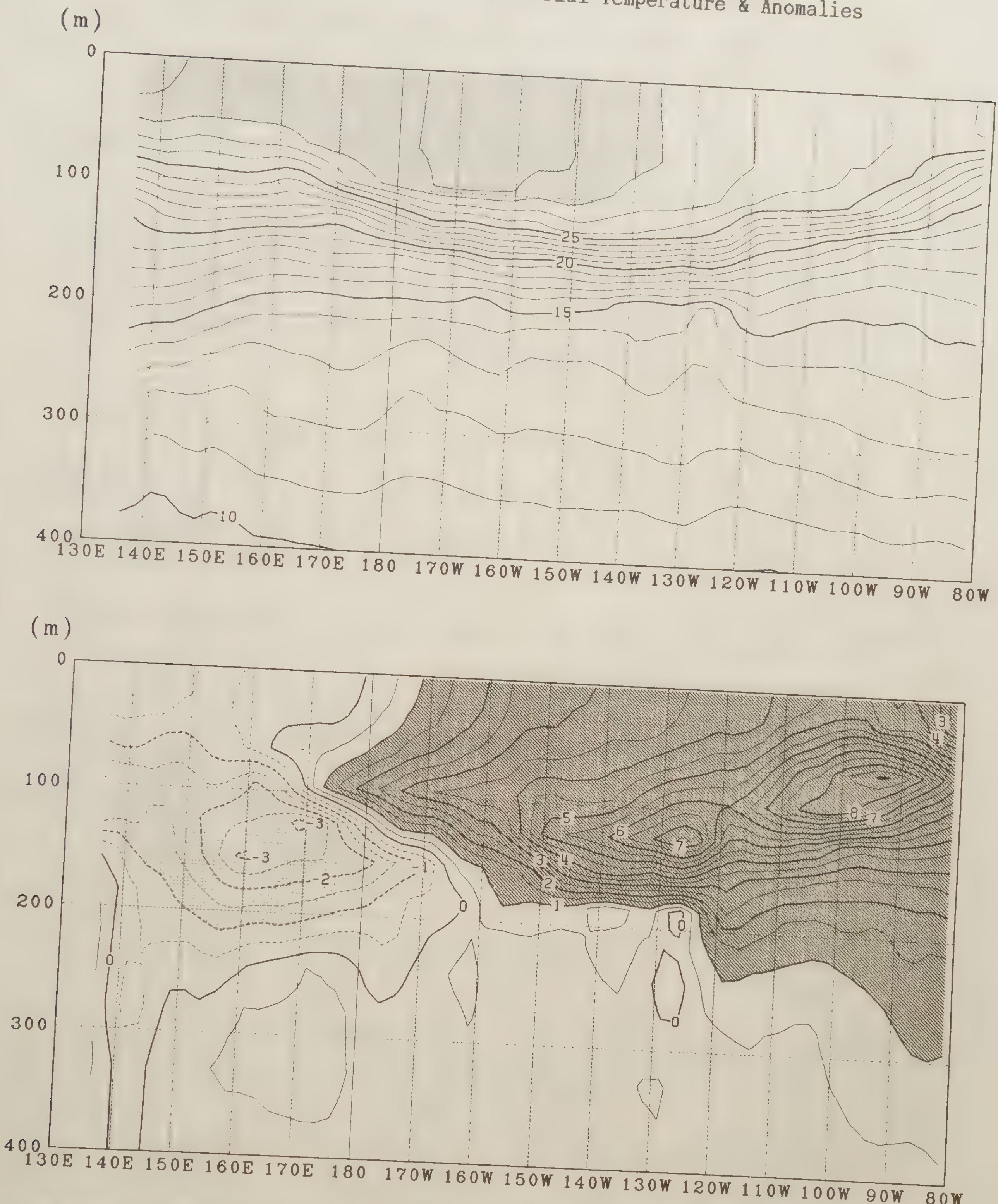
Fig.18 Subsurface (200m) temperatures in the Pacific Ocean for OCT 1997. Contour interval is 1°C. Observation points are denoted by dots.



第19図　太平洋表層水温図(深さ400m)（1997年10月）

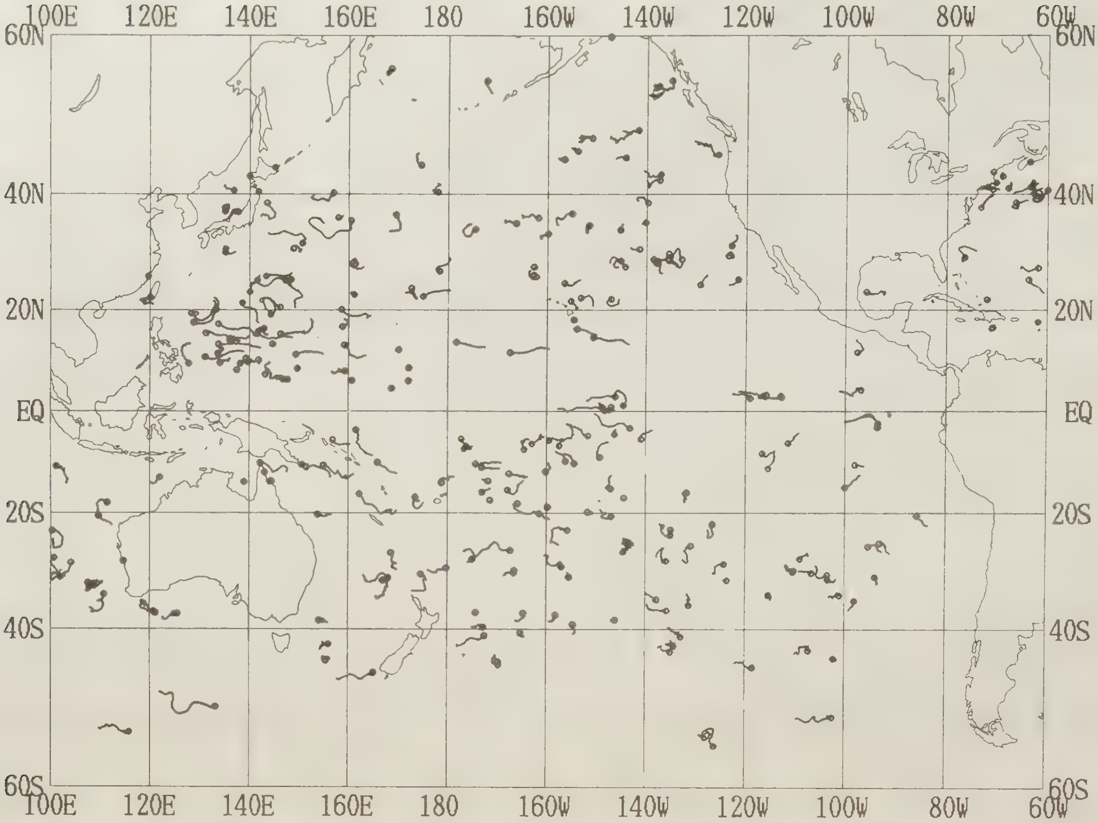
Fig.19 Subsurface (400m) temperatures in the Pacific Ocean for OCT 1997. Contour interval is 1°C. Observation points are denoted by dots.

Depth-Longitude Sections of Equatorial Temperature & Anomalies



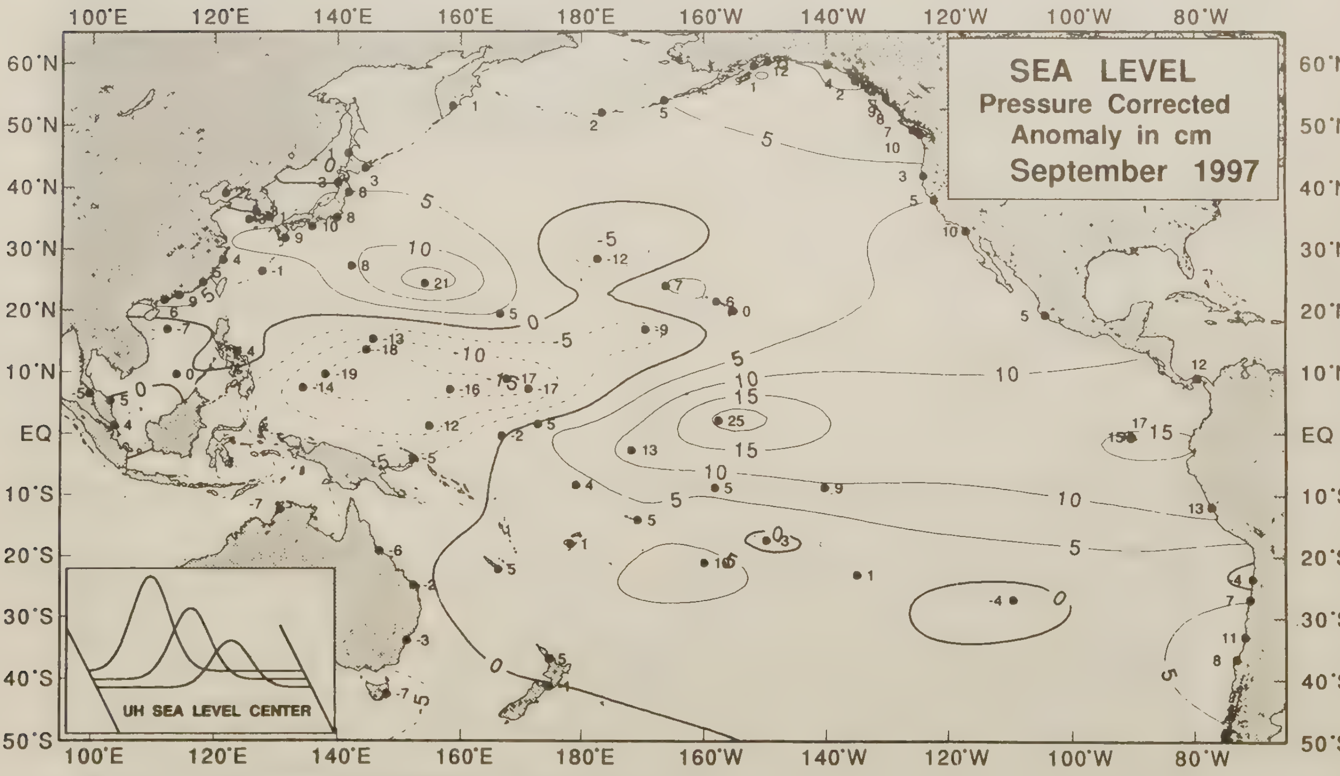

第20図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（1997年10月）

Fig.20 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for OCT 1997. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-1996 base period means.



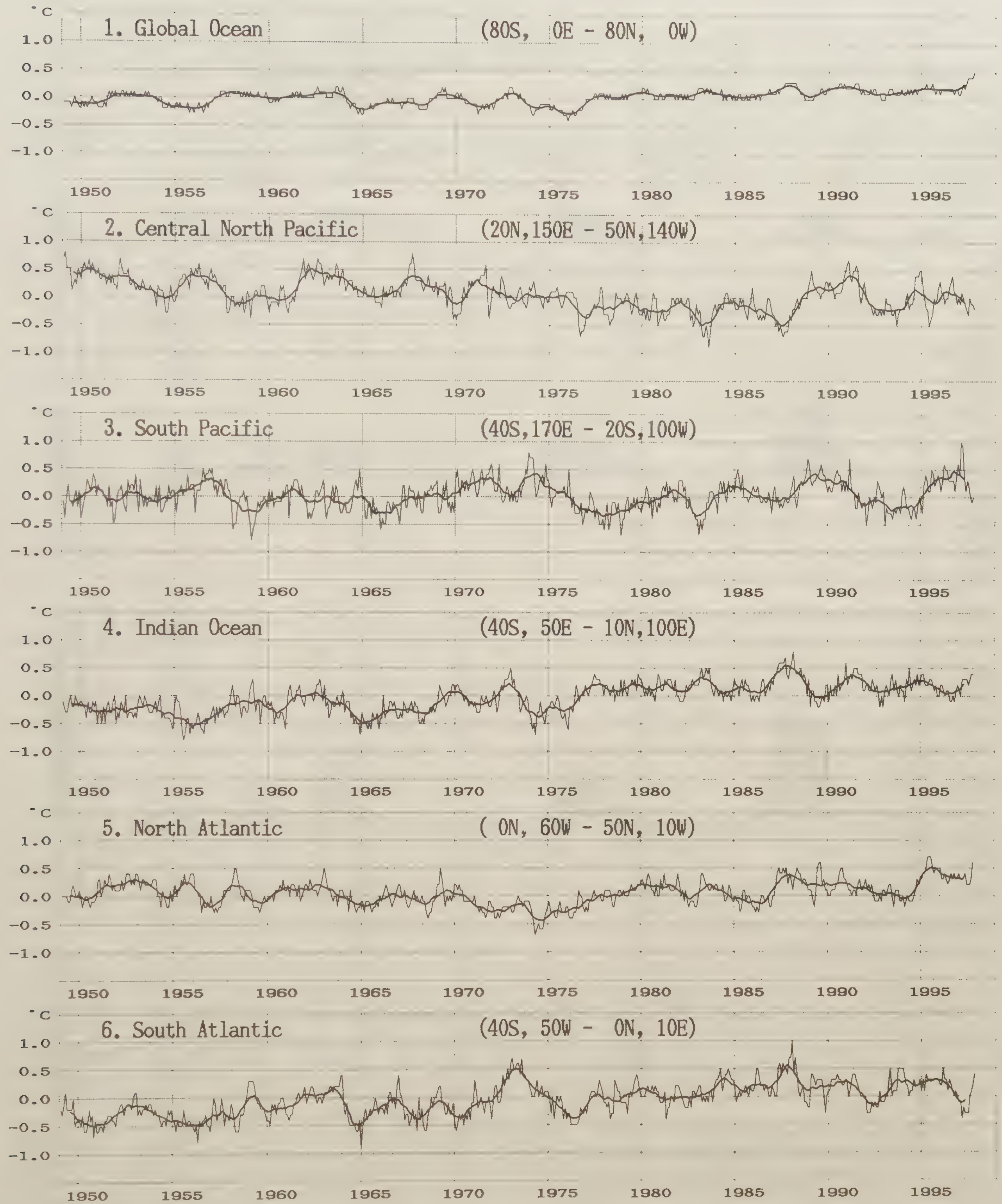

第21図　太平洋ブイ流跡図( 1997年10月 )

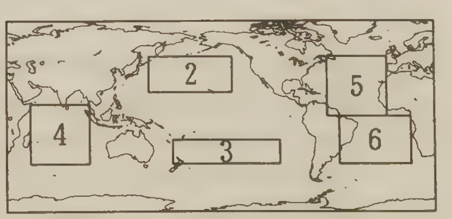
Fig.21 Movements of drifting buoys in the Pacific Ocean during OCT 1997.
Each track is for one buoy. Small circles represent last positions for the month.




第22図　太平洋海面水位偏差図 ( 1997年 9月 )

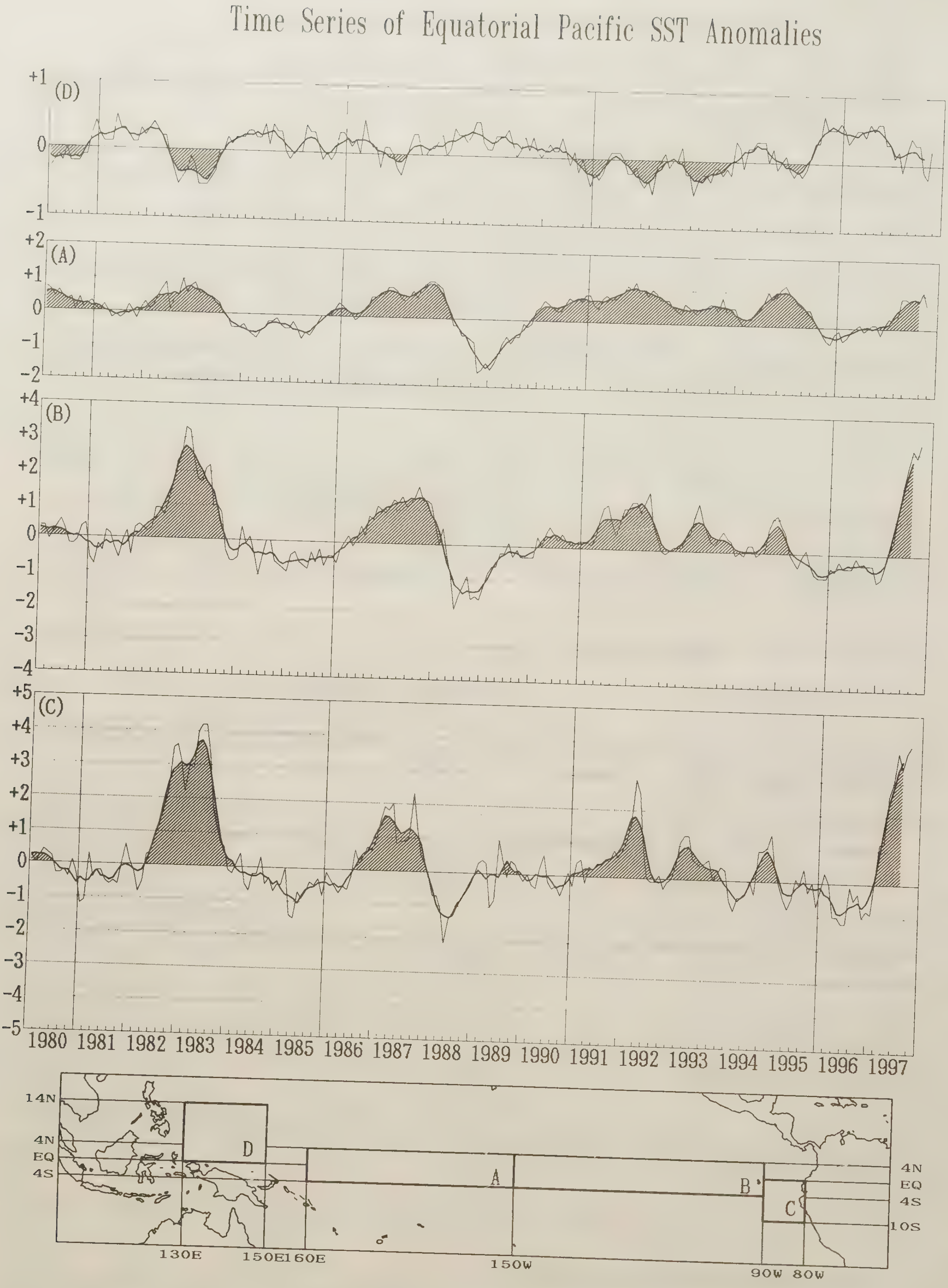
Fig.22 Monthly sea level anomalies for SEP 1997 obtained from mean sea level (1975-1995) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Dept. of Oceanography, Univ. of Hawaii.




第23図 海域平均海面水温偏差の長期変動

Fig.23 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1961-90). Thin lines show the monthly mean and thick lines their 13-month running means.



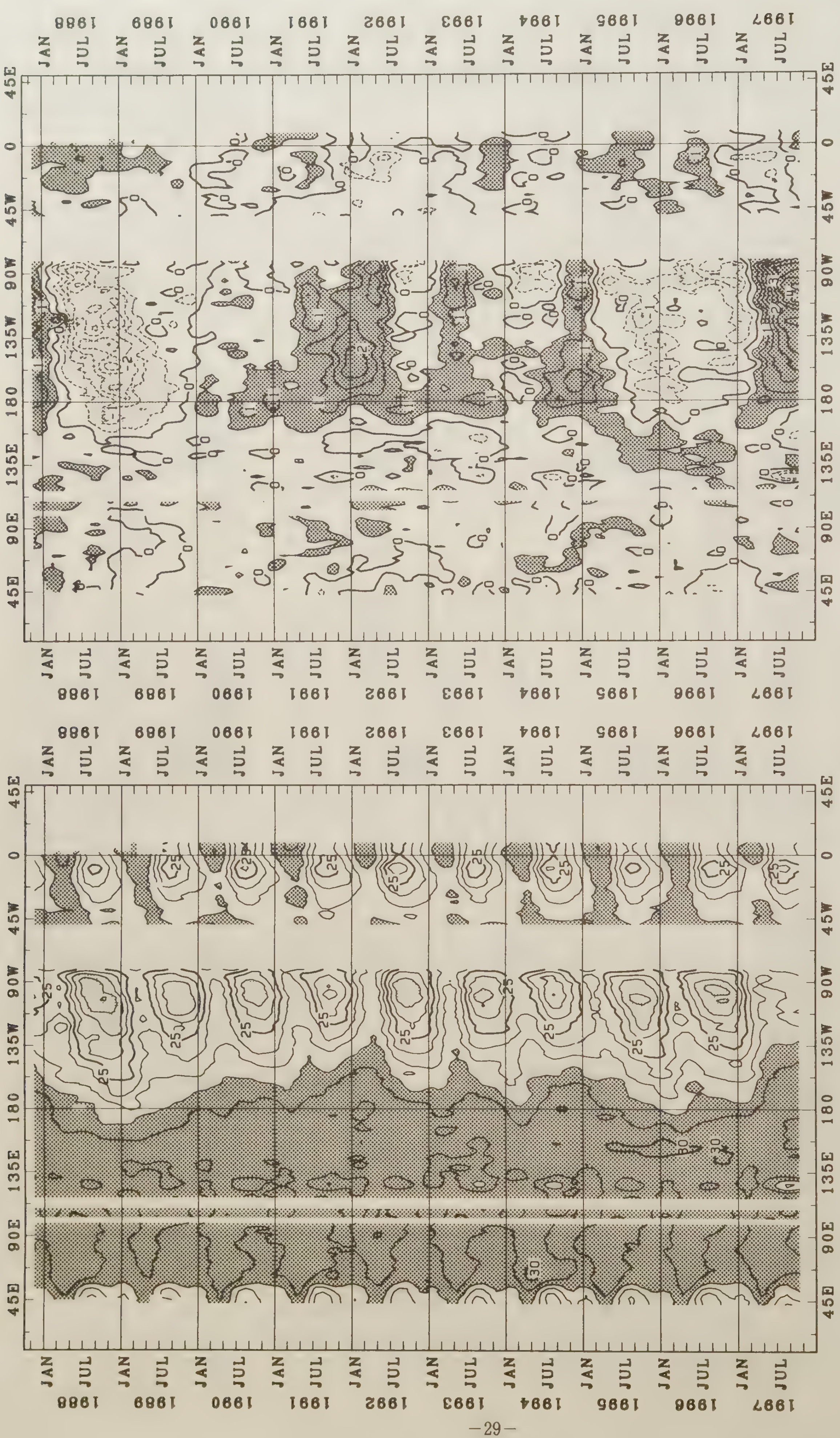

第24図　太平洋赤道域の海面水温偏差時系列図

Fig.24 Time series of monthly mean SST anomalies (°C) in the equatorial Pacific Ocean for the areas indicated at the bottom panel. Thin lines show the monthly means and thick lines their 5-month running means. Positive anomalies (A, B, C) and negative anomalies (D) are shaded. Anomalies are computed from the JMA climatology (1961-1990).

| MONTH | SEA SURFACE TEMPERATURE AND ANOMALY (°C) REGION D 14N-EQ 130E-150E | | REGION A 4N-4S 160E-150W | | REGION B 4N-4S 150W-90W | | REGION C EQ-10S 90W-80W | | SOI | SEA LEVEL PRESSURE ANOMALY (hPa) TAHITI 17-33S 149-37W | DARWIN 12-24S 130-52E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| JAN 95 | 28.3 | -0.2 | 29.0 | 1.0 | 26.2 | 0.8 | 25.7 | 1.4 | -0.4 | -0.3 | 0.6 |
| FEB 95 | 28.2 | -0.1 | 28.9 | 0.9 | 26.8 | 0.6 | 26.1 | 0.4 | -0.2 | 0.6 | 1.1 |
| MAR 95 | 28.2 | -0.2 | 28.8 | 0.7 | 26.9 | 0.0 | 25.8 | -0.1 | 0.4 | 0.3 | -0.5 |
| APR 95 | 28.7 | -0.1 | 28.8 | 0.6 | 26.9 | -0.2 | 24.6 | -0.5 | -1.4 | -1.6 | -0.0 |
| MAY 95 | 29.2 | 0.1 | 29.0 | 0.5 | 26.2 | -0.4 | 23.1 | -0.8 | -1.0 | -0.7 | 0.6 |
| JUN 95 | 29.6 | 0.3 | 29.0 | 0.5 | 26.0 | -0.1 | 22.2 | -0.5 | -0.1 | 0.3 | 0.4 |
| JUL 95 | 29.5 | 0.3 | 28.7 | 0.2 | 25.3 | 0.1 | 21.7 | 0.1 | 0.4 | 0.4 | -0.4 |
| AUG 95 | 29.8 | 0.7 | 28.4 | 0.0 | 24.3 | -0.3 | 20.5 | -0.1 | 0.0 | 0.4 | 0.3 |
| SEP 95 | 29.7 | 0.5 | 28.1 | -0.2 | 24.0 | -0.6 | 20.7 | 0.4 | 0.2 | 0.4 | -0.0 |
| OCT 95 | 29.8 | 0.5 | 28.0 | -0.4 | 23.9 | -0.7 | 20.4 | -0.3 | -0.3 | -0.7 | -0.5 |
| NOV 95 | 29.7 | 0.5 | 27.9 | -0.5 | 23.9 | -0.7 | 21.5 | 0.0 | 0.1 | 0.1 | -0.1 |
| DEC 95 | 29.5 | 0.6 | 28.0 | -0.2 | 24.2 | -0.7 | 21.9 | -0.7 | -0.5 | -0.9 | 0.0 |
| JAN 96 | 29.0 | 0.5 | 27.9 | -0.1 | 25.0 | -0.4 | 24.1 | -0.2 | 0.8 | 1.0 | -0.7 |
| FEB 96 | 28.6 | 0.3 | 27.6 | -0.4 | 25.7 | -0.5 | 26.0 | 0.3 | 0.1 | -0.2 | -0.5 |
| MAR 96 | 28.8 | 0.4 | 27.8 | -0.3 | 26.7 | -0.2 | 25.9 | 0.0 | 0.7 | 1.0 | -0.3 |
| APR 96 | 29.3 | 0.5 | 28.1 | -0.1 | 26.7 | -0.4 | 24.1 | -1.0 | 0.8 | 0.5 | -0.5 |
| MAY 96 | 29.6 | 0.5 | 28.5 | 0.0 | 26.2 | -0.4 | 22.9 | -1.0 | 0.3 | 1.2 | 1.2 |
| JUN 96 | 29.7 | 0.4 | 28.6 | 0.1 | 25.7 | -0.4 | 21.5 | -1.2 | 1.4 | 1.6 | -0.2 |
| JUL 96 | 29.8 | 0.6 | 28.4 | -0.1 | 25.1 | -0.1 | 20.4 | -1.2 | 0.7 | 0.6 | -0.6 |
| AUG 96 | 29.6 | 0.5 | 28.4 | 0.0 | 24.3 | -0.3 | 20.5 | -0.1 | 0.4 | 0.4 | -0.3 |
| SEP 96 | 29.8 | 0.6 | 28.4 | 0.1 | 24.3 | -0.3 | 19.8 | -0.5 | 0.5 | -0.7 | -1.7 |
| OCT 96 | 29.9 | 0.6 | 28.5 | 0.1 | 24.3 | -0.3 | 20.4 | -0.3 | 0.4 | -0.1 | -0.8 |
| NOV 96 | 29.5 | 0.3 | 28.2 | -0.2 | 24.3 | -0.3 | 20.5 | -1.0 | -0.0 | -0.5 | -0.5 |
| DEC 96 | 29.2 | 0.3 | 28.3 | 0.1 | 24.1 | -0.8 | 21.8 | -0.8 | 0.8 | -0.3 | -1.9 |
| JAN 97 | 28.6 | 0.1 | 28.3 | 0.3 | 24.7 | -0.7 | 23.4 | -0.9 | 0.3 | 1.7 | 0.9 |
| FEB 97 | 28.5 | 0.2 | 28.2 | 0.2 | 25.9 | -0.3 | 25.9 | 0.2 | 1.2 | 1.0 | -1.9 |
| MAR 97 | 28.3 | -0.1 | 28.4 | 0.3 | 27.0 | 0.1 | 27.1 | 1.2 | -0.6 | -0.5 | 0.9 |
| APR 97 | 29.0 | 0.2 | 29.1 | 0.9 | 27.5 | 0.4 | 26.3 | 1.2 | -1.1 | 0.4 | 2.3 |
| MAY 97 | 29.5 | 0.4 | 29.4 | 0.9 | 27.9 | 1.3 | 26.5 | 2.6 | -2.5 | -2.1 | 0.9 |
| JUN 97 | 29.6 | 0.3 | 29.3 | 0.8 | 28.1 | 2.0 | 25.7 | 3.0 | -2.3 | -0.8 | 2.1 |
| JUL 97 | 29.5 | 0.3 | 29.4 | 0.9 | 27.8 | 2.6 | 25.5 | 3.9 | -0.8 | -0.1 | 1.2 |
| AUG 97 | 29.0 | -0.1 | 29.2 | 0.8 | 27.7 | 3.1 | 24.0 | 3.4 | -2.0 | -0.9 | 2.2 |
| SEP 97 | 29.0 | -0.2 | 29.4 | 1.1 | 27.5 | 2.9 | 24.2 | 3.9 | -1.4 | 0.1 | 2.7 |
| OCT 97 | 29.6 | 0.3 | 29.1 | 0.7 | 27.9 | 3.3 | 24.8 | 4.1 | -1.6 | -0.2 | 2.7 |

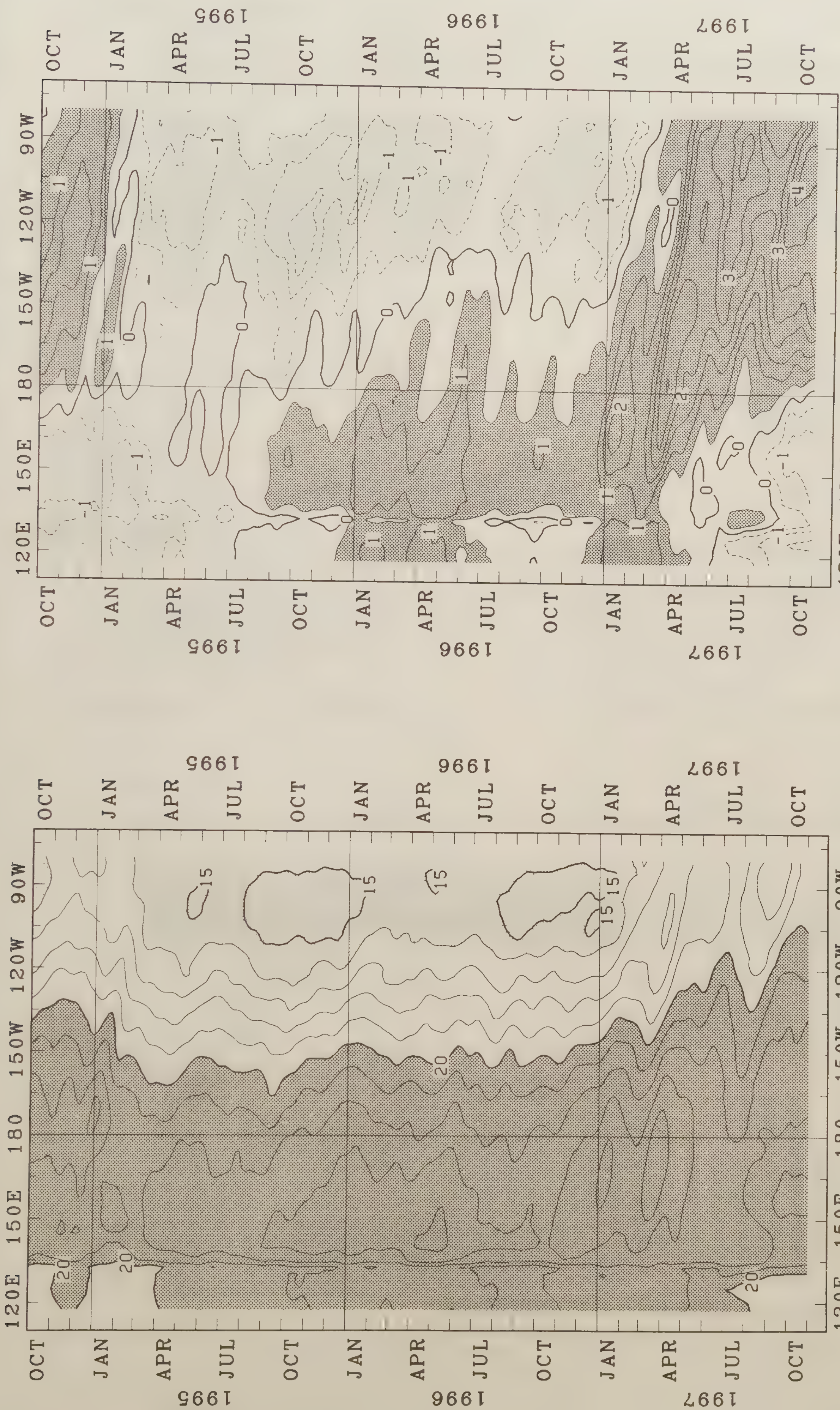
第1表　エルニーニョ監視指数

Table 1  El Nino Monitoring indices

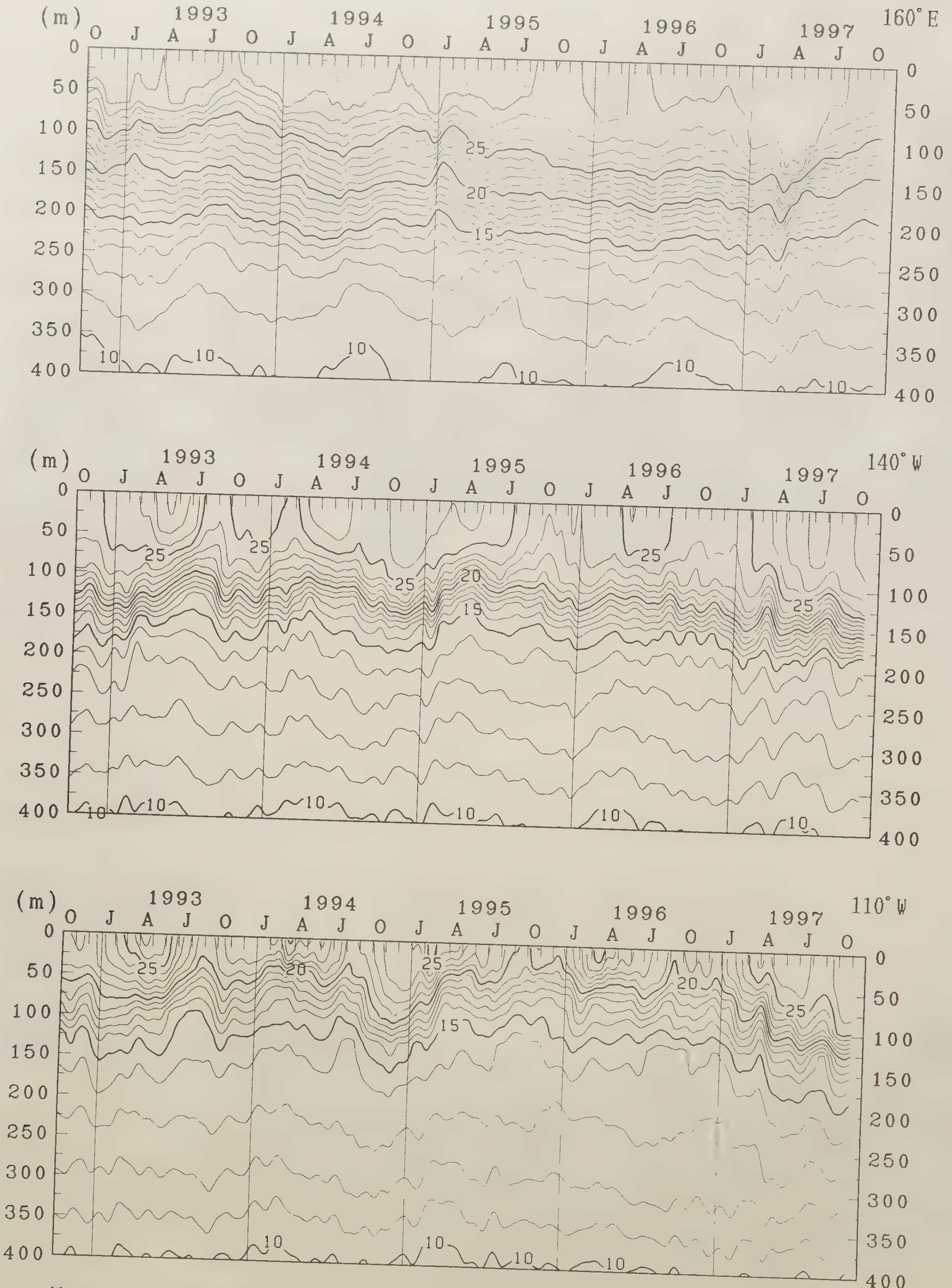



第25図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

Fig.25　Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2°N-2°S) in the global ocean. Contour interval is 1 °C (left) and 0.5 °C (right). Values greater than 28 °C are shaded and values less than 23 °C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1961-1990 base period means.




第26図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図
Fig.26 Time-longitude sections of ocean heat content in the upper 260m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C are shaded and values less than 16°C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-1996 base period means.




第27図　太平洋赤道域の表層水温の時間－深度断面図
（上：西部、中：中部、下：東部）

Fig.27 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.

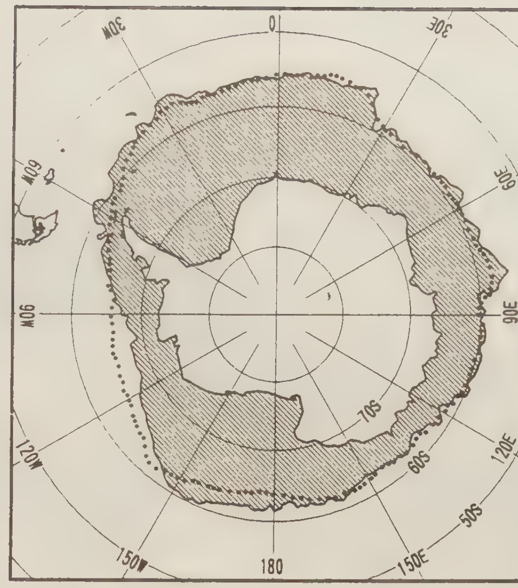



第28-1図 北極域の海氷図（1997年10月15日）

Fig.28-1 Sea ice chart in the Arctic on 15 Oct. 1997.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.

The data source is the National Ice Center (USA).

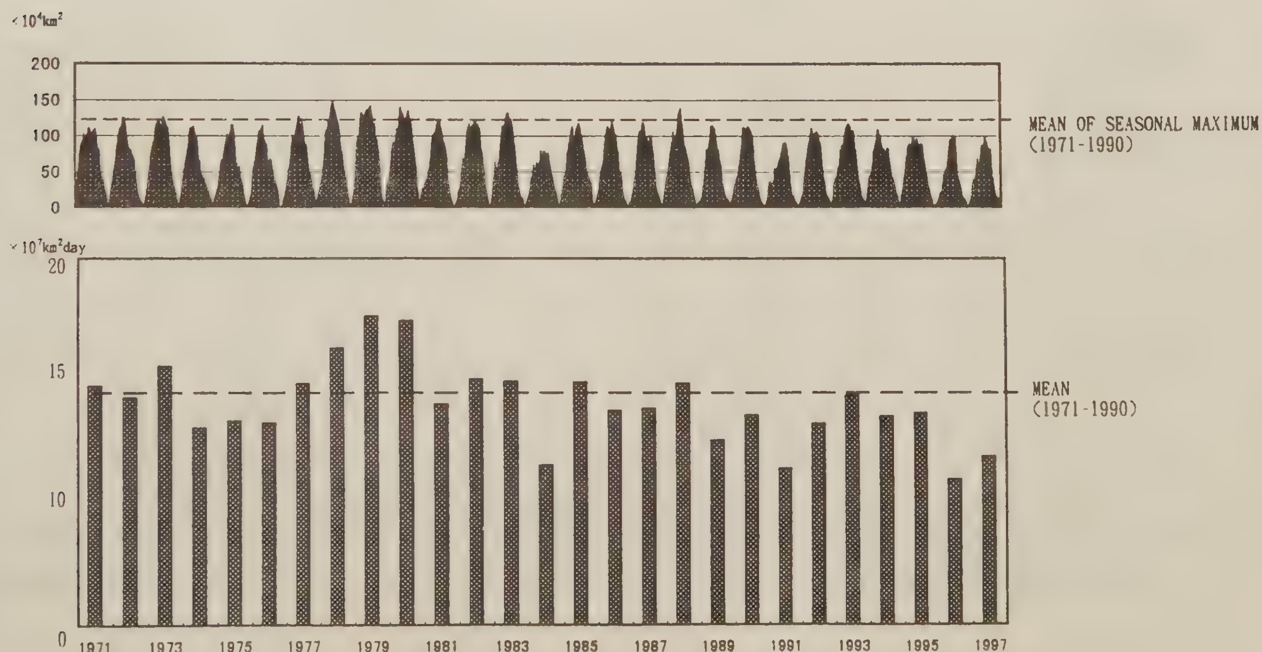



第28-2図 南極域の海氷図（1997年10月17日）

Fig.28-2 Sea ice chart in the Antarctic on 17 Oct. 1997.

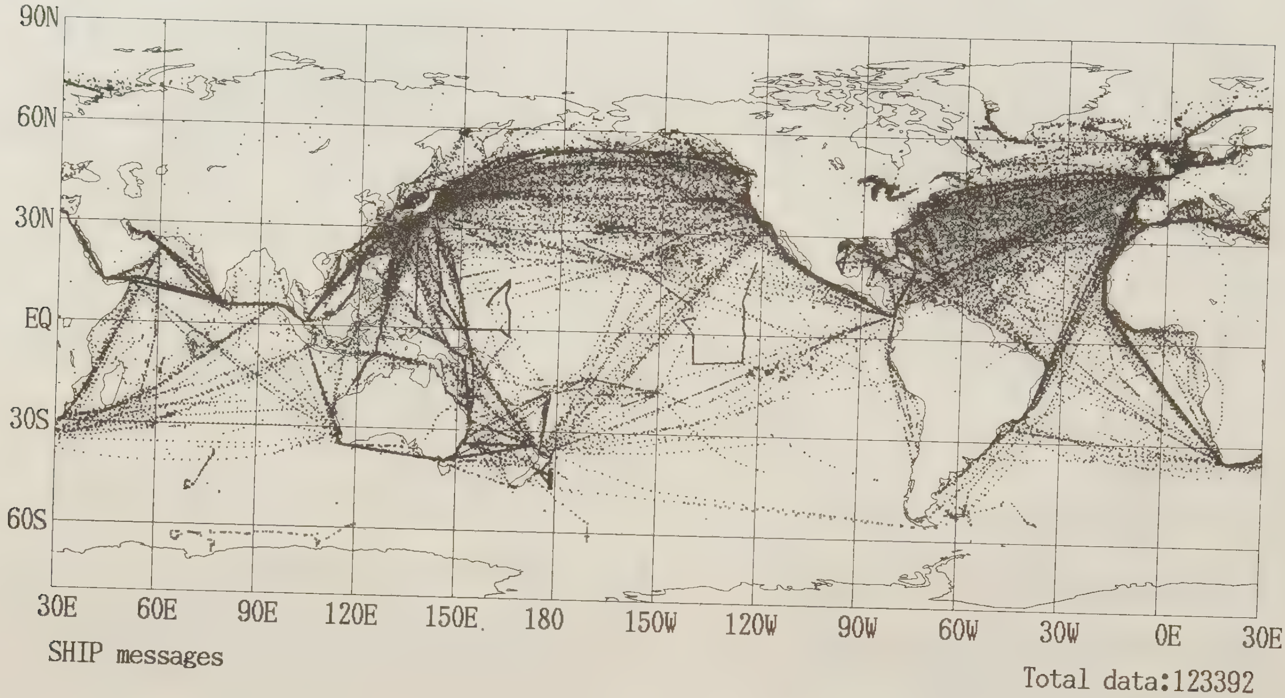
The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1973 through 1990.

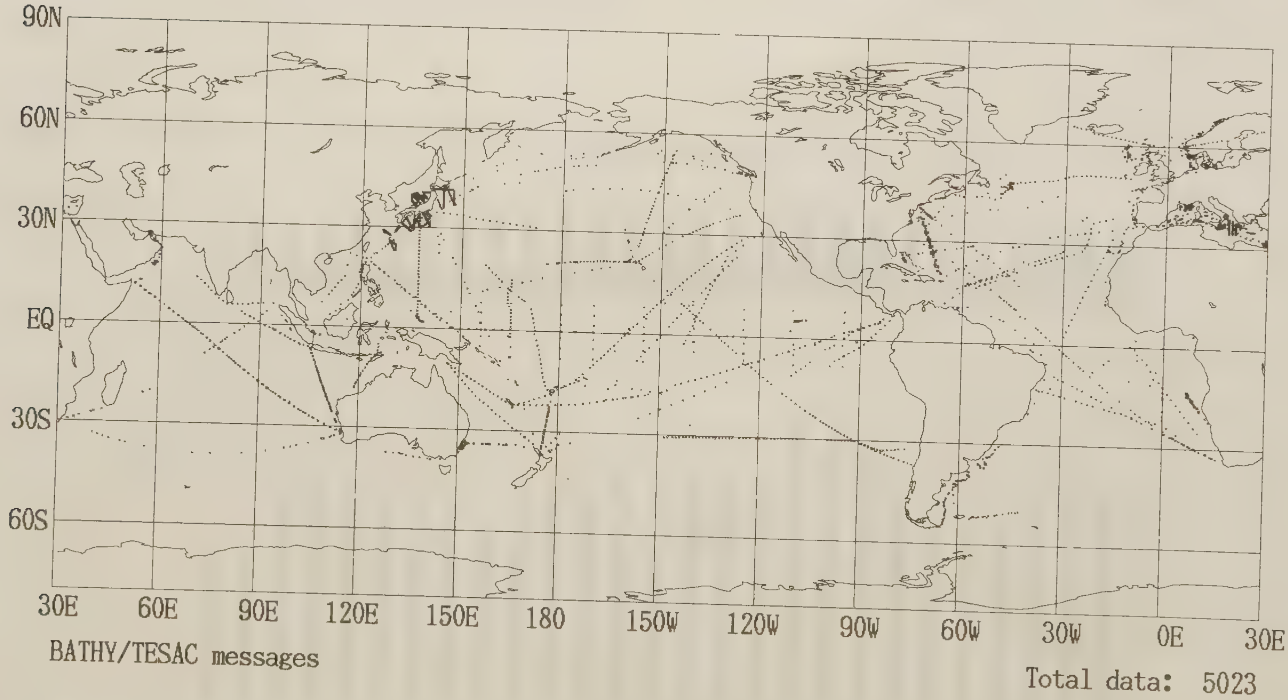
The data source is the National Ice Center (USA).




第28-3図　オホーツク海の海氷期の半旬海氷域面積（上段）とその積算（下段）の経年変化

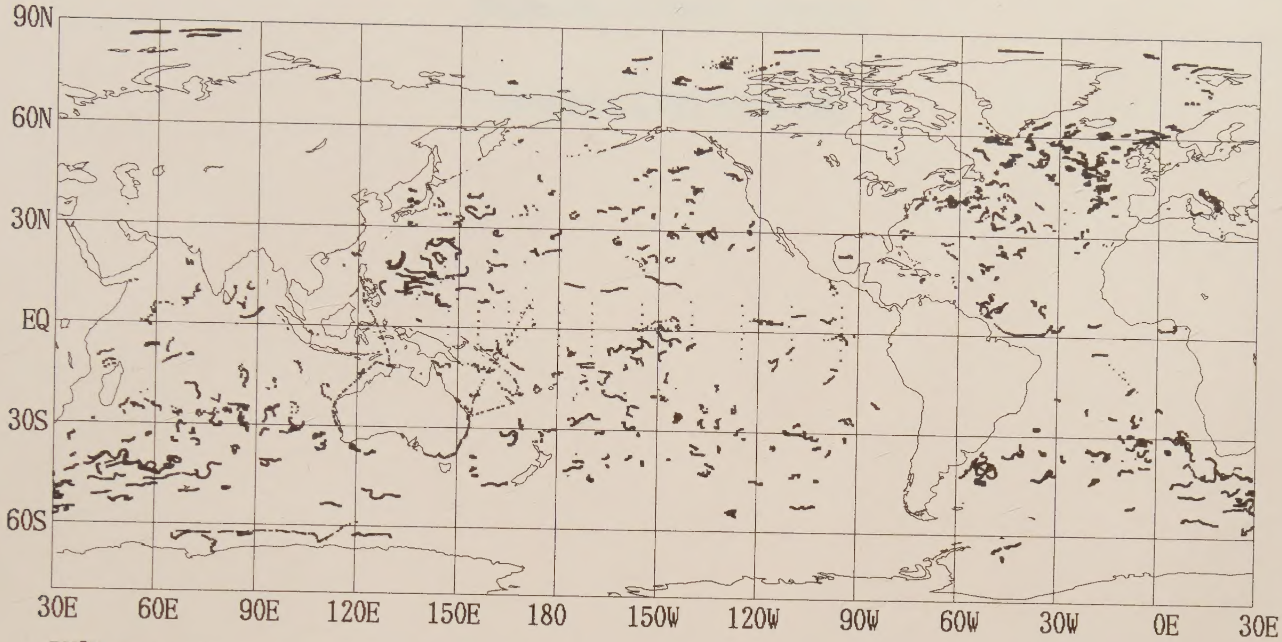
Fig. 28-3 Time series of every five day's sea ice extent from December to May (upper) and its summation (lower) in the Sea of Okhotsk.



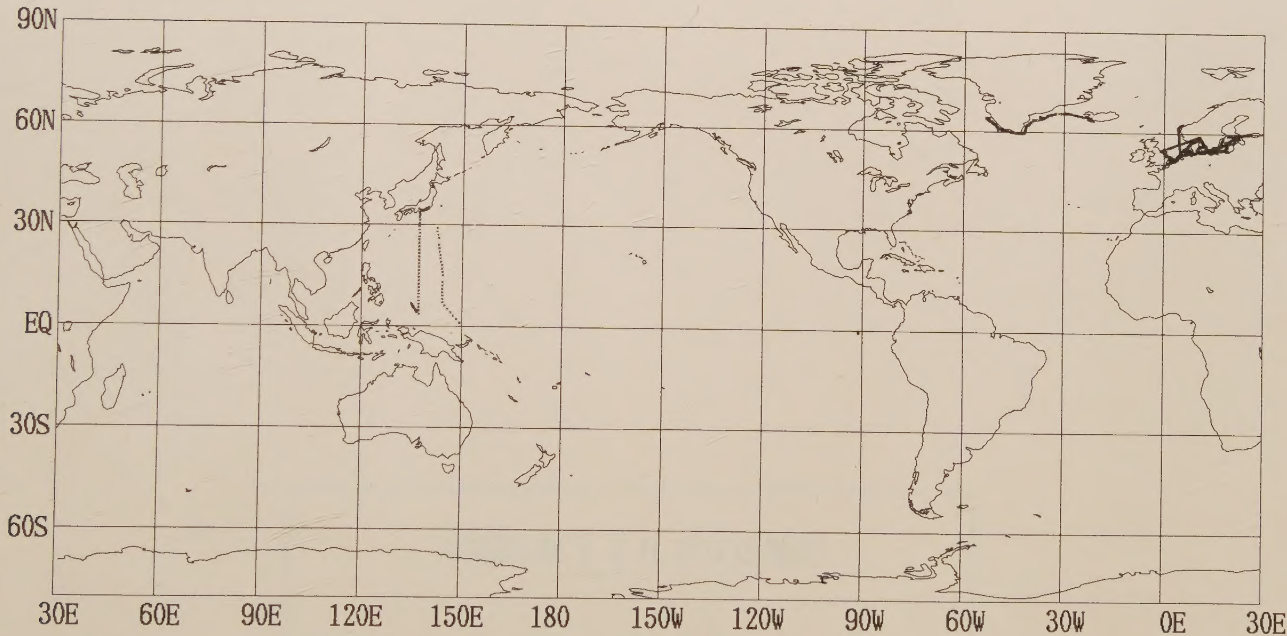

第29-1図　測点分布図(1997年10月)

Fig.29-1　Geographical distribution of SHIP messages (SST data, top) and BATHY/TESAC messages (subsurface temperature data, bottom) for OCT 1997.




BUOY messages

Total data:211241




TRACKOB messages

Total data: 2106

第29-2図　測点分布図(1997年10月)

Fig.29-2 Geographical distribution of BUOY messages (buoy drift and SST data, top) and TRACKOB messages (ship drift and SST data, bottom) for OCT 1997.

# 気 象 庁 海 洋 月 報

## Monthly Ocean Report

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